THIS WEEK'S National Petroleum NEWS

Coming Meetings

American Petroleum Institute, Division of Production, Baker Hotel, Dallas, Tex., June 3, 4.

American Society of Mechanical Engineers, National Oil & Gas Power meeting, Madison, Wis., June 15 to 18.

Society of Automotive Engineers, White Sulphur Springs, W. Va., June 15 to 19.

West Virginia Oil Marketers Association, Daniel Boone Hotel, Charleston, W. Va., June 18, 19.

American Society for Testing Materials, Chicago, June 22 to 26.

National Petroleum Association, Hotel Traymore, Atlantic City, N. J., Sept. 16, 17, 18.

American Institute of Mining and Metallurgical Engineers, Petroleum Division, Houston, Tex., Oct. 2, 3.

American Petroleum Institute, annual meeting, Stevens Hotel, Chicago, Nov. 10 to 12.

Third International Conference on Bituminous Coal, at Carnegie Institute of Technology, Schenley Park, Pittsburgh, Pa., Nov. 16 to 21.

Geological Society of America, Mayo Hotel, Tulsa, Dec. 28 to 31.

NATIONAL PETROLEUM NEWS

Vol. 23 No. 22

Published by

The National Petroleum Publishing Co.
1213 W. Third St., Cleveland, O.
Tel. CHerry 7672

Branch Offices:

Tulsa, 904 World Bldg., Tel. 3-7132.
New York, 342 Madison Ave., Tel. Vanderbilt 3-3950 and 3-3951.
Houston, 2420 Gulf Bldg., Tel. Fairfax 6286.
Chicago, 35 E. Wacker Drive, Tel. State 4141.

Subscription rate $3.50 per year, U. S., Mexico and Canada; $5 Foreign countries. Current copies 10 cents; for back issues more than two months old 25 cents per copy.

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R. G. A. VAN DER WOUDE, newly elected president of the Shell Petroleum Corp., is not a stranger to St. Louis or to the operations of this unit of the Shell group. He was assistant to President F. Godber, who headed the then Roxana Petroleum Corp. several years ago.

Mr. van der Woude entered the Shell service at London some 25 years ago, going from there to Shanghai as General Manager of the Asiatic Petroleum Co. (North China) Ltd. He was transferred from China to St. Louis. In recent years he has been stationed in Mexico, The Hague and London.

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Published at
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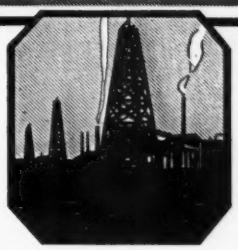
Cleveland



Branch Offices
Tulsa, New York, Houston, Chicago

Vol. 23 **CLEVELAND, June 3, 1931** **No. 22**

Unit Operation of East Texas Fields Proposed to Curb Drilling

DALLAS, June 2

THE need for more drastic regulation of production in the new East Texas oil fields is recognized by operators in the production branch of the oil industry, here for the first meeting of the Division of Production, of the American Petroleum Institute.

If greater emphasis on this point were needed than the fact this tremendous new oil district, only about six months old, is now producing 300,000 barrels a day, while its maximum allowable under the proration program is 160,000 barrels, such emphasis came yesterday through a further reduction in the price of Mid-Continent crude, caused by the recent drop in the East Texas area.

Most of the excess production there comes from 10 per cent of the producing wells whose owners will not conform to the proration program which operators over the state generally are following.

Directors of the institute today are making a trip by auto through the East Texas fields. They will meet in Fort Worth Friday to consider means of holding to the voluntary proration agreements in other fields in Texas and Oklahoma, operators who now see a portion of their market being supplanted by the cheap oil from East Texas.

Complete unit operation of the East Texas territory is advocated, as a "major operation" by Robert R. Penn, Texas operator, and chairman of the division of production of the institute.

"East Texas is rapidly reaching a point where the operators there must choose between continued dissipation of these great resources, with eventual bankruptcy for all of the minor operators; or, on the other hand, some plan of well thought out and orderly unit development," Mr. Penn was to tell operators generally at the Wednesday session of the meeting.

Mr. Penn sees the great immediate need for unitization of operations throughout the whole East Texas district, to supplement, not supplant proration, through curbing the drilling of wells and thereby preventing the great economic pressure that is exerted by owners of wells, once they are completed, to produce oil from them.

With 600 wells already producing in this district and 500 rotary rigs in operation there now, each capable of putting down a well in 30 days, Mr. Penn said that 6000 wells were in sight for the territory, assuming that only one well would be drilled to every 20 acres.

"Even if only 6000 wells were drilled, and if each well were held to 100 barrels per day average, we would have 600,000 barrels production per day from that field and it is a safe assumption that it will be capable of continuing for a long period to produce in the neighborhood of 100 barrels per day per well, if wells are drilled no closer than one to every 20 acres."

The ideal system of unit operation he went on to say, would be to form a great corporation to take over all properties in the East Texas field and issue stocks or certificates of equity to the owners for their interests. Because of legal objections he said the logical solution is, first, a corporation controlled by the independent operators in the territory and into which all the independent operators will merge their interests.

Such corporation could agree with the larger companies to operate all properties in the field under some such form of committee supervision as have been worked out in the Van and Kettleman Hills fields.

Orderly Development, or Bankruptcy

By Robert R. Penn*

An Address before the Division of Production, American Petroleum Institute, Dallas, June 3

* * *

GREAT though the difficulties may appear to effect such a plan, there could be no better place to start a wide spread unit operation than in the new East Texas field.

Conditions there are appalling in the extreme, not alone from a standpoint of the terrific effect which that new discovery has had on the crude oil situation as a whole, but from a standpoint of the wasteful and reckless disregard of all conditions except the desire of the individual lease owner to get his oil to the surface first and as rapidly as possible.

There we see a wild race for production, a wild search for outlets, a reckless throwing away of untold resources through over-drilling and too rapid production, as well as a tremendous physical waste of gas and gas energy and repeated intrusions of water into wells due to flowing them wide open and coning in the water from below. There we have a perfect example not only of economic waste but of physical waste as well.

For a long time we have fought the battles of proration and I have been one of those who have urged proration as a remedy for our condition. I have realized that, in the present state of our laws, proration was not a complete remedy, because of the refusal of some operators to comply and because of the great delays created by the injunction method of attack through the courts.

Such have been these attacks in many of the fields of Texas, and also in Oklahoma and California, that we have never really been able to apply fully and efficiently the remedy of proration. Many of the failures which have been charged to proration are due to the fact that we have not really had proration, but only a partial application.

Until the new East Texas field came into being, however, we all had had hopes that we could get a general improvement in conditions through proration, and also through the gradual extension and development of the idea of unitization.

Robert R. Penn, chairman, Division of Production, American Petroleum Institute

In East Texas, however, I am deliberately of the opinion that proration cannot adequately handle the situation unless existing Texas statutes are strengthened, both because of the numerous legal attacks that are now being made and because of the great wastes that are being created there pending the decisions in these cases, by unequal withdrawals of oil, by dissipation of gas energy, by the too rapid encroachment of water and by the trapping off of many millions of barrels of oil which will never be recovered unless proper measures of proration or unitization can be applied immediately.

*Chairman, Division of Production, American Petroleum Institute.

I do not, by any means, say that proration has been a failure or that proration efforts should be discontinued. Great as is the present waste and distress in the oil industry, I am fully convinced that it would have been far greater by now but for the proration remedies that have been applied. Nor is it possible to discontinue those efforts or abate them.

Proration is here to stay, and unitization would make possible an efficient proration, because it serves not alone to curb production after wells have been drilled, but to curb the drilling itself and thereby prevent and avoid the immense economic pressure that is exerted by the owners of wells, after they have completed them, to produce oil from them.

The very enormity of the East Texas field, together with its unusually advantageous geographical position, makes proration and ratable takings, as well as all other forms of conservation efforts, vitally necessary—not only to that area but to the entire industry. Already we have been confronted in East Texas with many of the evils which result from the lack of efficient and effective proration and ratable takings. There have been unconnected wells in certain areas with offsets pulling many thousands of barrels of oil and taking far more oil than their share, to say nothing of the waste of gas energy and the coning of water.

Proration and ratable takings must be rigidly applied in East Texas if we are to prevent a complete debacle, and yet, with a field of such magnitude and with such a great number of different leases, including hundreds of very small leases and many hundreds of different operators, we cannot but fear that proration may prove only mildly effective in controlling

(*Continued on Page* 22)

The Editors' Viewpoint

Gossip Purveyors Retard Recovery

"I BELIEVE that if every ticker service in the country could be suspended for an indefinite period, an improvement in the country's mental attitude would come quickly," said a prominent oil man of Tulsa the other day. "The stock market is on the mind of nearly every business man in the nation. He forms his impressions by watching the price of the stocks in which he has invested and the current situation is such as to make him believe that nothing will ever be right again."

And, to extend the remarks, the stock prices of today have nothing whatever to do with values or future possibilities. The low levels are the work of those birds of ill-omen known as "bears," or "shorts." Bad news is their raw material and if the news isn't bad enough to suit their purpose, they invent a horrifying tale to scare the wits out of the people that have bought securities.

Someone has called these professional prophets of gloom the "buzzards of business." That is not quite accurate. The buzzard serves a useful purpose and he waits for his victim to die. The "bears" attempt to hasten that death.

As regards the oil industry, the stock market today presents a ridiculous picture. Ten dollar bills are selling for a dollar and less. One company, regarded since its formation years ago as soundly managed, was worth at the end of last week, at stock market prices, less than $5,000,000. It would cost that much to replace its refinery. Its cash and accounts receivable almost equalled the total selling price of its stock.

Another, a major pipeline company, has nearly as much cash as the total worth of the company, based upon stock market prices. One could go through the entire list and show that if the entire common stock could be purchased at prevailing prices, the buyer would acquire a company at 5 to 15 cents on the dollar of value.

Every day of the week this writer by walking two or three blocks in any principal Tulsa street can get curbstone information to the effect that virtually every oil company is going to be liquidated within a few days. Now, Tulsa is practically free of professional short traders. The purveyors of rumor are merely passing on, without stopping to think it over, some bit of vicious gossip.

It is our belief that every oil company that has a right to live—that has attempted to give its stockholders fair treatment and to serve the public honestly—will come through the current period of small earnings. Some of them made mistakes, chiefly in the direction of over-expansion. The temptation was great; money was easy to get and the future was rosy. The economists of the nation were busy telling the public that an era had arrived unlike anything ever known and that everybody was going to be twice as rich as he ever dreamed of being.

Now, with realization that there are certain principles of business that do not change, there is a period of readjustment. Certain useless lumber in every company must be scrapped. But the financial structure of industry is being gone over and revised to fit the present situation and it is for that reason that the oil companies that are more than opportunists, will be with us when profits again are realized.

We have in mind the case of an oil producer whose readjustment, we think, is typical of what is bound to occur throughout. A few years back he saw a big opportunity. He arranged for financing through two or three large banks. The $10,000,000 he borrowed went into the purchase and development of properties. The set-up, based upon the average price of oil over a 25-year period and a net production estimated at far less than he was certain to get, was for a full return of the investment in 10 years.

IT SHOULD have worked out, but it didn't. Proration came along, reducing this man's production and the price went down far below the average figure he had counted on. He took the only course that was open, the same one that many another company is taking today.

He went to the bankers and said, in effect:

"The 10-year plan won't work. I though it would and you were satisfied that it would. Now, I am just as good a producer of oil as I ever was. I am just as attentive to the economies as before and I have lost none of the knowledge that I acquired in my many years of experience. You can close me out and take charge yourselves, but I doubt that you will get a man that knows as much about this company and its properties as I do. If you see it that way, then this debt will have to be spread over more years."

And that is what was done.

Common sense and orderly thinking are going to bring the oil business and every other business once more into a period of profits. It is time that was realized. It is not necessary to pump up any artificial enthusiasm, but it will be helpful if the spreaders of gloom, professional and amateur, be kicked swiftly in the place made and provided for kicking.

Orderly Development

(*Continued from Page* 20)

the conditions with which the industry generally is now confronted. It is to maintain the control and make proration completely effective that unitization is needed.

We have many and various estimates as to the size of this new field, but, based upon comparison of reports of a number of geologists, I personally am of the opinion that the East Texas field is going to include at least 120,000 productive acres and that the very lowest average production per acre which can be estimated for that field is 12,500 barrels. In other words, we have in sight there at least 1,500,000,000 barrels of oil and the probability is that the amount will be much greater.

All that is necessary to increase the total is to increase the estimate of barrels per acre, for each one thousand additional barrels of oil recovered per acre will add 120,000,000 barrels to the total recovery of the field, and it may be that the final toll will run from 2,000,000,000 to 3,000,000,000 barrels of oil, or even higher.

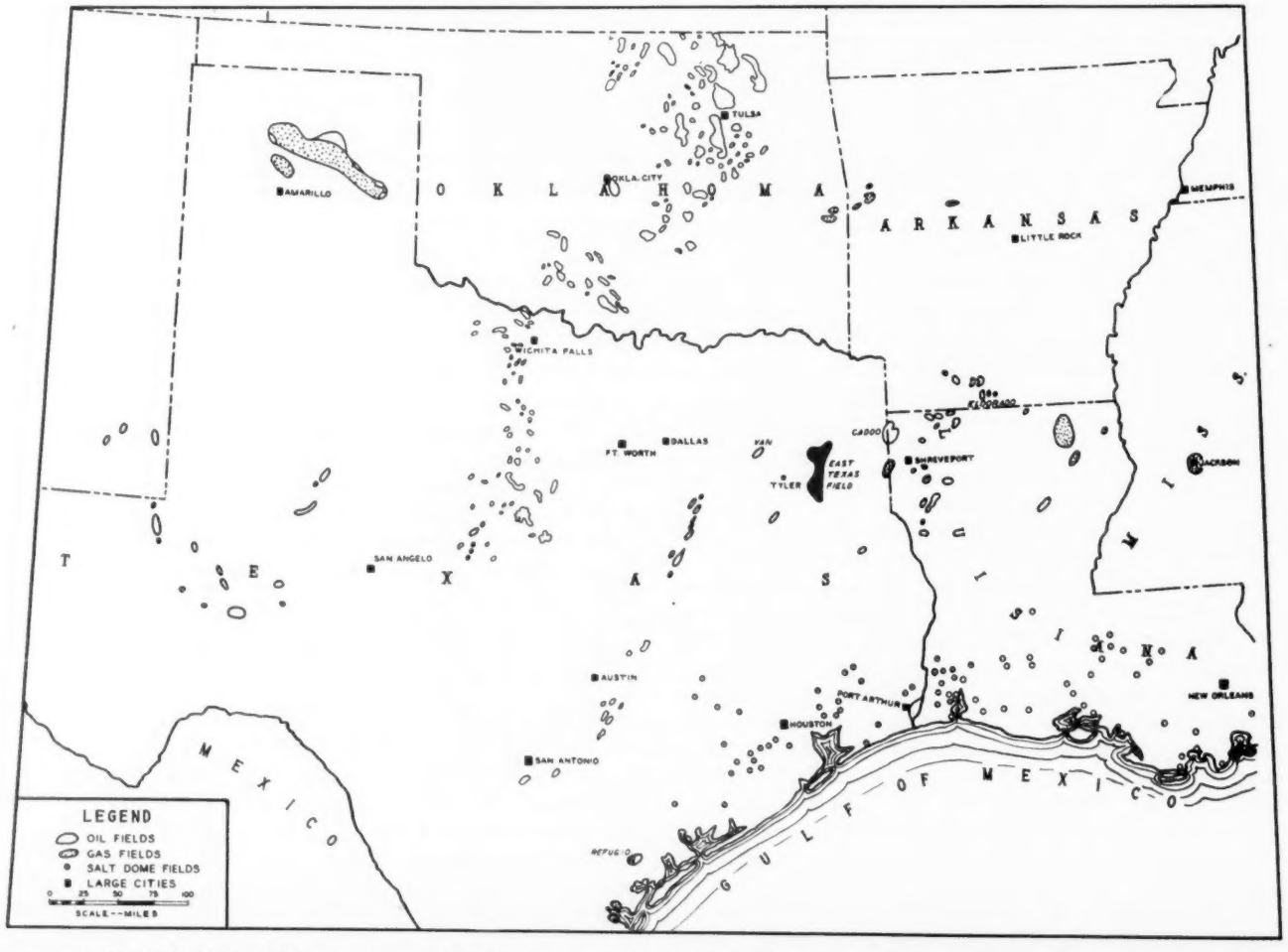
Just how great such a volume of oil really is, may best be indicated by the statement that, if we accept the lowest estimate given, and if this oil were taken out at the rate of 400,000 barrels per day, it would require ten years to exhaust the field. Thus it is no temporary condition with which we are confronted.

Before the development of such fields as Yates, Van, Oklahoma City, Hobbs, Kettleman Hills and now East Texas, it was possible to shrug our shoulders over almost any new field and say the flush would be gone in a little while, but we cannot do that in the case of East Texas. We must look upon it as a flush field that will be a flush field for too long ahead to ignore its vast threat to the stability of the entire industry.

With such a field now being developed, with 600 or more wells already producing, and with more than 500 rotary rigs in operation there, we have in sight some 6000 wells, even if we recklessly assume that only one well will be drilled to every 20 acres. Each of those 500 or more rotary rigs is making a well in approximately 30 days, or an average of 12 wells per year per rig. In other words, we may easily, unless some check is placed, have 6000 wells completed early in 1932.

If those wells are drilled, even under proration, every well represents just so much pressure for greater outlet. Even if only 6000 wells were drilled and if each well were held to 100 barrels per day on an average, we would have 600,000 barrels production per day from that field and it is a safe assumption that it will be capable of continuing for a long period to produce in the neighborhood of 100 barrels per day per well if the wells are drilled no closer than one to every 20 acres.

Due to several townlot con-



The new oil fields in East Texas, now producing at the rate of 300,000 barrels daily, despite proration efforts, in their geographical relationship to other oil and gas fields of the southwest

ditions it seems unsafe to assume that the number of wells can be held to 6000, or one to every 20 acres. There probably will be drilled within a comparatively short period at least 7000 or 8000 wells and with every well exerting its pressure, from an economic standpoint, for a certain amount of production so that it may pay out, at least partly, on the investment, we have the beginnings there of the same vicious circle which we have seen in Oklahoma City and other areas, under proration.

In other words, the more wells, the more pressure for production and the more oil produced; hence a lower price; as a result, pressure for still more production to keep up a certain number of dollars return per well; then again—a lower price, and so on through the course of the vicious circle until oil actually approaches zero from a standpoint of value.

It is only necessary to look at the map to realize the enviable geographic position of the new East Texas field. So strategic is that position that East Texas oil need only be sold cheaply in order to force its entrance into any of the principal markets of this country. East Texas can, as rapidly as conditions give the opportunity, take the markets of any of the other oil areas.

The task of holding back this flood of oil is too great for the present systems of proration because they do not sufficiently discourage drilling and because of the widely recognized fact that the many producers in an ordinarily prorated pool cannot and will not bring into consideration the question of price.

The general conception of the law also stands in the way of discussions of price in connection with proration. When one considers the number of pipelines that are now completed or being built into that field, as well as the railroad outlets and the numerous small refineries that have sprung up in the area, there is no real hope for a permanent and fully effective solution of the East Texas situation by proration. We must go still farther and look for more radical relief.

So far I have been unable to find anyone who could give an intelligent estimate of the number of operators who would be active in this new East Texas field. The size of the leases, generally speaking, runs from town lots and 2 or 2½ acre tracts up to probably 80 to 100 acres maximum.

The East Texas oil boom chokes the towns with cars and people. This is on the south side of Kilgore, in Gregg county

There are comparatively few single leases of more than 100 acres or so and I know personally of only one or two which amount to more than a section, 640 acres. The acreage is scattered and held in many hands. Many of the operators have never had oil field experience before. Numbers of them think that all that is necessary to get rich is to drill a producing well.

The very cheapness of the operations puts a premium on waste, both economic and physical. Wells can be completed as flowing producers for approximately $20,000 each and another $8000 or $10,000 will take care of the standardization for pumping. Drilling contractors have been allowed to proceed almost without restriction except in the case of those working for the major companies and for a few of the more experienced independent operators. With drilling contracts made on a footage basis the contractor has every incentive to ram the hole down as fast as he can.

Straight hole measurements are not taken on some of the wells from beginning to completion. As the result, every form of waste exists—crooked holes, wells drilled too deep into the sand and even into the water itself; water sucked in by too rapid production of the wells; gas pressure exhausted; wild wells; burning wells; wells drilled too close together; wooden derricks; second-hand casing used in many wells; wells inadequately tubed and inadequately controlled; every possible form of waste. And the greatest waste of all is the tremendous effect on the entire industry.

Take one look at the annual economic loss which has been brought to the entire oil industry by this East Texas field and which is now only beginning. The East Texas field has depressed the price of the average barrel of crude oil at least 40 cents per barrel already. That means a loss of $960,000 per day on the average daily production of 2,400,000 barrels and this in a year's time mounts up to the stupendous figure of $350,000,000 for 1931 alone.

How long this will last no man can attempt to say, but no better idea of this tremendous waste can be obtained than by comparing it with the Chicago fire, the greatest conflagration the United States ever experienced. In the Chicago fire the total loss was placed at $190,000,000—hardly more than half the loss the East Texas field is inflicting on the oil industry for 1931 alone, and this is only the beginning.

Even though the field itself produces 1,500,000,000 barrels, it may never make an actual profit for the average operator therein. Some who bring in

their wells early and enjoy large drainage with high pressures are making profits now; but it is very questionable whether the average barrel of oil produced in East Texas will actually make a profit if present conditions continue.

The most optimistic estimate that anyone could make now would be to allow 10 cents a barrel profit for the field, or $150,000,000 during the life of the field, in order to obtain which $350,000,000 must be taken away from the industry as a whole in the first year, to say nothing of future years.

Over and beyond that tremendous loss is the immense destruction of values of oil producing properties in every part of the country. This loss may well run into the billions of dollars and, as an incident thereto, I may mention that the state of Texas alone in 1931 will lose approximately $5,000,000 in gross production and ad valorem taxes on oil properties, or some $15,000 per day.

There are some 23 other states having oil production and they will suffer like losses, to say nothing of the losses in income and corporation profits taxes to the United States government. With such conditions existing on every hand it is of the greatest public interest to find not only a palliative but a real relief.

The industry and the public have endured long enough the insufferable conditions that are now existing. These conditions are such that they can only result in the destruction of billions of dollars of property, in a tendency toward absolute monopoly in the oil business and in eventual higher prices to the public generally. Such an oil field as East Texas should, under proper operations, add at least $1,000,000,000 to the capital of the southwest and of the nation. Instead, it is being allowed to create billions in losses.

THERE can be only one answer. At first blush that answer looks impossible but we must come to it. The answer is—complete unitization of the East Texas field. That is the operation which our patient must undergo, and furthermore, the industry must find means to unitize other major fields before they develop into situations such as we now find in East Texas.

Of course there will be opposition from many operators, both large and small. There will be a cry that such unitization robs the individual of his opportunity. Other arguments too will be brought up, but just as the patient in the hospital goes protesting under the ether for a major operation, surrendering his individuality for the time being, so must all operators in the East Texas field submit to this operation of unitization, or otherwise they must submit to the bankruptcy which inevitably awaits a continuance of the present type of operations.

Personally, I do not believe that any such unitization as has been accomplished in Van and Kettleman Hills can do the job here. If each lease owner retained an undivided interest it would take an army of bookkeepers as big as the United States Army to keep track of the various accounts. Simply a merging of lease interests would add complications and destroy many of the economies which could be gained.

THE ideal system would be to form a great corporation to take over all properties in the East Texas field and issue stocks or certificates of equity to the owners thereof for their interests. Here again, however, we are faced with the objection that certain corporations cannot own stock in other corporations and there probably would be some other obstacles in the way.

So the logical solution is a combination of the two methods; first, form a corporation which will be controlled by the independent operators in the East Texas field and into which all of those independent operators will merge their interests, taking stock for same. Then such a corporation could agree with the larger companies who own larger percentages of the field, to operate all of the properties jointly under the management of this independent corporation and with the ordinary forms of committee supervision which have been worked out in Van and Kettleman Hills.

Thus the corporation of the independents might own some 50 per cent of the field and some ten or 15 major operators might own the other 50 per cent, in varying proportions. The bookkeeping involved in taking care of some ten or 15 joint interest accounts would not be too difficult. Thus the corporation of the independents would handle the entire operating property, delivering the oil in agreed proportions to the various purchasing companies.

HERE again we are met with the question of what would become of the individual operators while they are waiting for dividends from such a corporation. The answer is not difficult. Those producers who take stock for their equities would be protected by an agreement that the corporation would pay dividends as earned, would enter no other fields and engage in no other forms of oil activity except the development of the properties in the East Texas field. Furthermore, the stock should be listed on the New York Stock Exchange or the New York Curb and made marketable, so that any owner could dispose of his stock at will and also, so that the banks would recognize such stock as collateral.

Again there arises the question of taking care of those properties which are in debt, and of providing funds for the operations of the corporation. The answer to this would be to have valuations made and let the new corporation immediately float a bond issue sufficient in size to repay in cash the actual development expenditures of every shareholder in the corporation.

Such a bond issue secured by such a group of properties should not be too difficult to float at a fair interest rate and with reasonable provisions for sinking fund or other amortization. Also the larger producers joining in the unit operation on an undivided interest basis would contribute their shares of the funds to take care of their operations.

In all of these things it would be assumed necessarily that proper valuations of properties would be worked out by capable engineers and geologists

Timber is close at hand, lumber cheap and consequently wooden rigs, instead of steel derricks, are used in the East Texas fields

and that all operators joining in the corporation would agree to accept the valuations of such a board, with provisions—if need be—for appeal in contested cases to a board of arbiters.

By this time the East Texas field has reached such a point in its development that engineers and appraisers could determine very closely how much oil could be expected to be produced from each property in the field. The mineral and fee or royalty interests should also be evaluated and opportunity should be given for the owners to participate in the corporation in like manner with the lessees, making arrangements to reimburse them for their actual expenses and issue stock for their equities above expenses.

Assuming that the field will produce 1,500,000,000 barrels during its life and that this oil has a real value in the ground, under a system of operations such as I am proposing, a company to own and operate the whole property would be capitalized at the value in the ground of all of the oil in the field, if all operators would join in the corporation. If 50 per cent joined in, there would be justification for a capitalization just half as large. Such a capitalization, based on proper valuations, would justify a sufficient bond issue for the purposes which have already been described.

Whatever bond issue was found necessary, there should be little difficulty in floating same with the endorsement of such a board of engineers as is proposed and with the moral support that would be given such a proposition by the major companies.

Thus, if an operator had a property valued at $200,000 and he had spent $60,000 for actual development, he would receive back his $60,000 in cash and would receive $140,000 stock in the corporation. With the stock and bonds listed on the New York Stock Exchange or the Curb, for quick sale and for credit safety, he would have an immediate market for his stock at any time he needed to sell. He would have an asset which his banks would recognize as collateral and he would have a stock equity in a corporation which would be committed to the policy of paying out dividends as rapidly as earned, after due consideration had been given to the necessities of taking care of its bond issue, interest and sinking fund and of providing an adequate surplus.

For such a plan to be thoroughly effective, assurance should be given the independent operators joining therein that their corporation would be allowed to work out its own destiny and that it would have full voice in the operation of the field with committee supervision such as in Van and in Kettleman Hills. Furthermore, the power of fixing the outlet and agreeing upon the price for crude oil with the pipeline companies should be in the hands of this corporation or of the committee supervising the operation.

Not only would such a plan of unitization for East Texas give greater value to the oil in the ground, but it would effect enormous economies in operation. How many wells could actually be eliminated could only be a guess, but surely at least 2000 wells could be saved and probably more. If 2000 wells were eliminated there would be a saving of $60,000,000 in drilling operations and equipment of wells.

Furthermore, by proper utilization of gas energy and control of the water table, the lifting cost for the oil could be greatly reduced. How much reduction this would obtain is again a matter of estimate, but if we assume that only 5 cents per barrel were saved on lifting cost, the total saving would be the

enormous sum of $75,000,000. The possibilities, in fact, are stupendous.

In the formation of such a corporation the interests of the mineral and royalty owners would not be overlooked, for an offer would be made to all of them to put their interests into the corporation if they desired to do so. However, even if the royalty owners did not desire to join the corporation on a valuation basis, they would be the gainers eventually through higher prices and higher recoveries of crude oil. Their interests would be served by the proper utilization of gas energy, by ratable takings, by prevention of rapid water encroachment, by the higher recoveries of oil per acre and by the better prices which would result from a general stabilization.

Thus the royalty owner would eventually get returns per acre from two to three times the amount which he can reasonably expect if the present system of exploitation is continued. The royalty owners should have representation on the board of directors or operating committee and every precaution should be taken to see that fair and equal drainage and production is established throughout the field. * * *

Unit Operation in East Texas Favored by Governor

DALLAS, May 30

GOVERNOR Sterling of Texas prefers not to call the legislature back into special session to deal with proposed oil statutes strengthening the state's power to regulate production in East Texas; but says that "if something is not done soon the state and the people will lose much more than a special session would cost."

The governor, who favors unitization of the entire Sabine Uplift region has not abandoned his original plan for a new state commission to deal with oil and gas.

"With no personal reference to any member of the railroad commission," he said at Austin, "Texas is too large a state, with too many varied interests, for three men to have to administer over railroads, trucks and busses, and also oil and gas."

Unitization of the more than 100,000 acres of proved oil land in the Sabine Uplift region could be organized without violating anti-trust laws, the governor said. He recognizes the difficulties in getting the various interests to agree to such a plan.

A stronger law for waste prevention is now favored by the East Texas Chamber of Commerce, which made public a statement May 29 through its president, Dr. N. D. Buie at Marlin. No particular proposed act of legislation is favored or opposed, but it is suggested that some state agency from time to time fix marketing regulations and that ratable takings of crude should be enforced.

"It occurs to us," says the committee, "that temporary restraining orders might be issued only after notice and hearing and that all cases involving the power of the state and its agencies respecting the regulation of oil and gas have precedence over other litigations and the trials of such cases, and appeals therein, be speeded up.

"We also suggest as a possible provision of the law, which would stand the test of the court, that where suit is brought to enjoin the act of the legislature, the rule of the commission, or the act of its agency, all persons who are similarly situated, having like interests and complaining of the same, be given opportunity and required to join in such litigation."

The East Texas operators' advisory committee of eleven, headed by Charles F. Roeser of Roeser & Pendleton, Inc., Fort Worth, resolved at a meeting in Tyler, May 29, "that it is the consensus of opinion of this meeting of the committee that as at present enforced—and without any criticism of the personnel of the commission or umpires—proration in East Texas has broken down."

The committee concludes that the existing situation may be helped:

(a)—By an immediate testing of the present powers of the railroad commission by pressing to speedy conclusion pending litigation.

(b)—It is also concluded that the present injunctive delays may be prevented by additional legislation which might also provide for more drastic penalties against violators during the pendency of such injunctive litigation.

The East Texas operators' advisory committee also voted to recommend to the railroad commission that the daily allowable for East Texas be raised to a figure of from 175,000 to 200,000 barrels daily, within the discretion of the commission, such increase to be distributed equally among the Lathrop, Kilgore and Joiner areas.

Raising of the allowable, as suggested in the recommendation, would prove mainly of psychological effect, in recognizing potential production gains, as pointed out by the committee. The actual marketed quantities of oil from the region at present are dependent largely on tank car shipments by under-the-market sellers.

Before the posted market was cut 30 cents a barrel, May 26, from top price of 67 cents a barrel,—average field price based on gravity tests, 63-65 cents,—less than 85,000 barrels daily moved out of the East Texas region on top schedules. More than 150,000 barrels daily moved on contract, or spot below-market sales, at an average of 35 cents a barrel, forcing the reduction posted.

Limitation of Imports May Be Dropped

WASHINGTON, June 1.—It is understood here that the extension beyond June of the voluntary limitation of imports by the four principal importing companies depends upon bringing the East Texas situation under control.

In response to representations by the Hoover administration, the four companies April 1 made a reduction in their im-

ports, to continue for three months, in aid of the efforts of the oil states governors' to alleviate the domestic situation. Secretary of Commerce Lamont and Secretary of the Interior Wilbur carried on the negotiations.

The Gulf Oil Corp. and the Standard Oil Co. of New Jersey said they would reduce their crude oil imports by 25 per cent. Neither company imports refined products. Shell Petroleum Corp. announced readjustments in its exchanges of gasoline between affiliated companies and said this would enable it to reduce its imports by at least 50 per cent for 1931, as compared with 1930.

Pan American Petroleum & Transport Co., subsidiary of the Standard Oil Co. of Indiana, said it would curtail its imports from Venezuela 23 per cent for 60 days starting April 1.

The inference is that the importers will not consider themselves bound to hold back on crude and gasoline they bring into this country after June 30, unless the producers in East Texas are curtailing their own efforts.

Chain Store Tax Bills Considered in Ohio

COLUMBUS, O., May 25.—Two chain store tax bills have been introduced into the Ohio legislature. While service stations are not mentioned specifically in the bills the definition of chain stores is sufficiently broad to include them.

One measure, House bill No. 313, provides a license of $50 per store for companies having two to five stores, and a license of $100 per store for companies having more than five.

The other measure, House bill No. 618, is similar to the Indiana chain store tax bill that recently was upheld by the U. S. Supreme court, with higher rates for Ohio. In this bill individual stores would pay $3 a year, chains of two to five stores $10 each store, five to ten stores $25 each, ten to twenty stores $35 each, and more than 20 stores $50 each.

Stanolind Recognizes East Texas Cheap Crude with General Cut

TULSA, June 1

AGAIN recognizing low prices at which its competitors have been purchasing crude oil Stanolind Crude Oil Purchasing Co. today reduced the posted price of Mid-Continent crude oil 18 to 30 cents per barrel.

The new schedule begins at 25 cents per barrel for oil below 29 gravity and adds 1 cent for each degree of gravity above that to 40 and above which is now posted at 37 cents per barrel. Under the previous schedule Stanolind prices started at 43 cents and increased 2 cents per degree of gravity to 67 cents for 40 and above.

In a statement explaining the price change R. S. Ellison, president of Stanolind said:

"During the past week purchasers of East Texas Crude reduced their posted prices 30 cents per barrel, bringing 40 gravity down to 37 cents per barrel. Approximately 400,000 barrels of crude per day is now being sold throughout the Mid-Continent field, including East Texas, at about half what we have been paying. High gravity crude is being freely offered in East Texas today at less than 20 cents a barrel.

"We cannot go on paying more for our raw material than is paid by our competitors. There cannot be one price for them and another for us.

"Existing low prices are the result of current overproduction and, in our opinion, will continue until that overproduction ceases. We will gladly pay better prices for crude the moment economic conditions in the industry warrant our taking such a step."

Other large purchasers of Mid-Continent oil were slow in meeting the new Stanolind schedules. Magnolia Petroleum Co. was the first to announce a similar cut.

No Bids on Kettleman Crude

By Telegraph

WASHINGTON, June 1.—Today was the day for opening bids on the Government's royalty oil from the north dome of Kettleman Hills, but no bids were received by Secretary Wilbur for the oil.

At present the government has about 300 barrels per day of royalty oil. It is being bought by the Midoil Refining Co. at $2.57 per barrels. High gravity California crude is posted at 35 cents per barrel.

No Appeal of Merger Case

By Telegraph

WASHINGTON, June 2.—The only legal obstacle to consummation of the Standard of New York-Vacuum merger was removed today. Attorney General Mitchell announced that he would not appeal from the decision of the St. Louis federal court which held the merger would not violate anti-trust laws.

Crude Output Gains as Stocks Pile Up

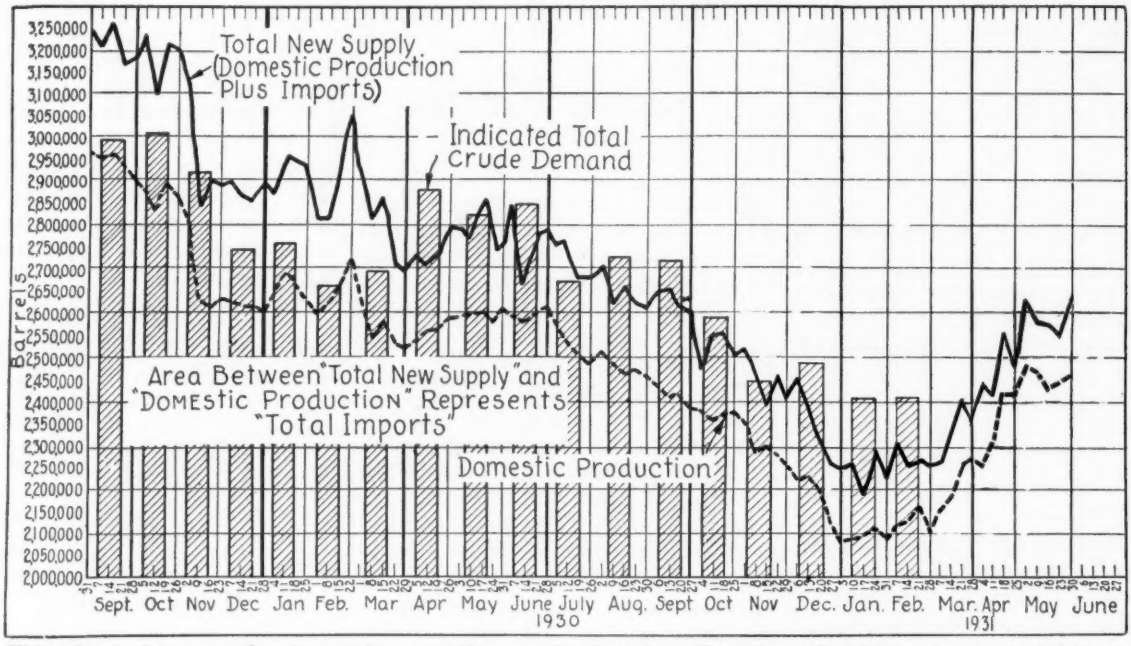
WASHINGTON, June 2.—Crude production in the United States in April, a 30-day month, was 73,101,000 barrels, a gain of 3,700,000 barrels over March, a 31-day month, according to the U. S. Bureau of Mines.

Crude stocks were nearly 500,000,000 barrels April 30, or about the same as they were March 31.

Gasoline production totaled 36,601,000 barrels, compared with 35,246,000 barrels in March. Stocks April 30 were 48,587,000 barrels, or 300,000 barrels more than on March 31.

There was small change in production of other major refined products, a decline in most instances. Stocks declined except gas and distillate and residual fuel, which gained.

Review of Late Production News



This chart shows crude oil supply according to the American Petroleum Institute reports (solid line) in relation to indicated crude oil demand as taken from the Bureau of Mines monthly reports (shaded columns).

DAILY average crude production in the country increased 25,000 barrels the week ended May 30, according to the American Petroleum Institute. It totaled 2,462,150 barrels.

East Texas output continued to climb, gaining nearly 50,000 barrels, daily average. Kilgore area gained 32,000 barrels, Joiner, 6000 barrels and Longview, 9500 barrels.

Crude oil imports gained 60,000 barrels, to 164,000 barrels daily average. Total new supply was 2,625,900 barrels, or 85,000 barrels more than the previous week.

California

FIVE important production tests, four of which are expected to boost the potential production of the Kettleman Hills pool, are expected within the next week.

June 1 will mark the adoption of California's new proration schedule that gives a state allowable of 427,500 barrels, daily, exclusive of Kettleman Hills, and a probable allotment for this field of 60,000 barrels, bringing the total to 487,500 barrels daily, 12,500 barrels less than the present allowable of 500,000 barrels, and about 50,000 barrels less than the present actual daily output.

Texas, New Mexico, Louisiana

PRORATION allowables for the Sabine Uplift region would be raised from 160,000 barrels daily to "between 175,000 and 200,000 barrels daily, in the discretion of the railroad commission," according to recommendations of the East Texas operators' advisory committee of eleven, after a meeting at Tyler, May 29. Excess production from approximately 10 per cent of the East Texas wells continues to exceed 100,000 barrels daily.

Crude and Gasoline Stocks

(In Barrels)

Crude stocks, April 30, 1931	497,983,000
Crude stocks a year ago	529,677,000
Gasoline stocks, April 30, 1931	48,587,000
Gasoline stocks a year ago	54,422,000

Current production in this country by pools is found on page 73.

Governor Sterling regards as the ideal solution of the East Texas problem the organization of the entire Sabine Uplift region into a giant unit operation, which he admits has practical difficulties but which he does not regard as violative of anti-trust laws.

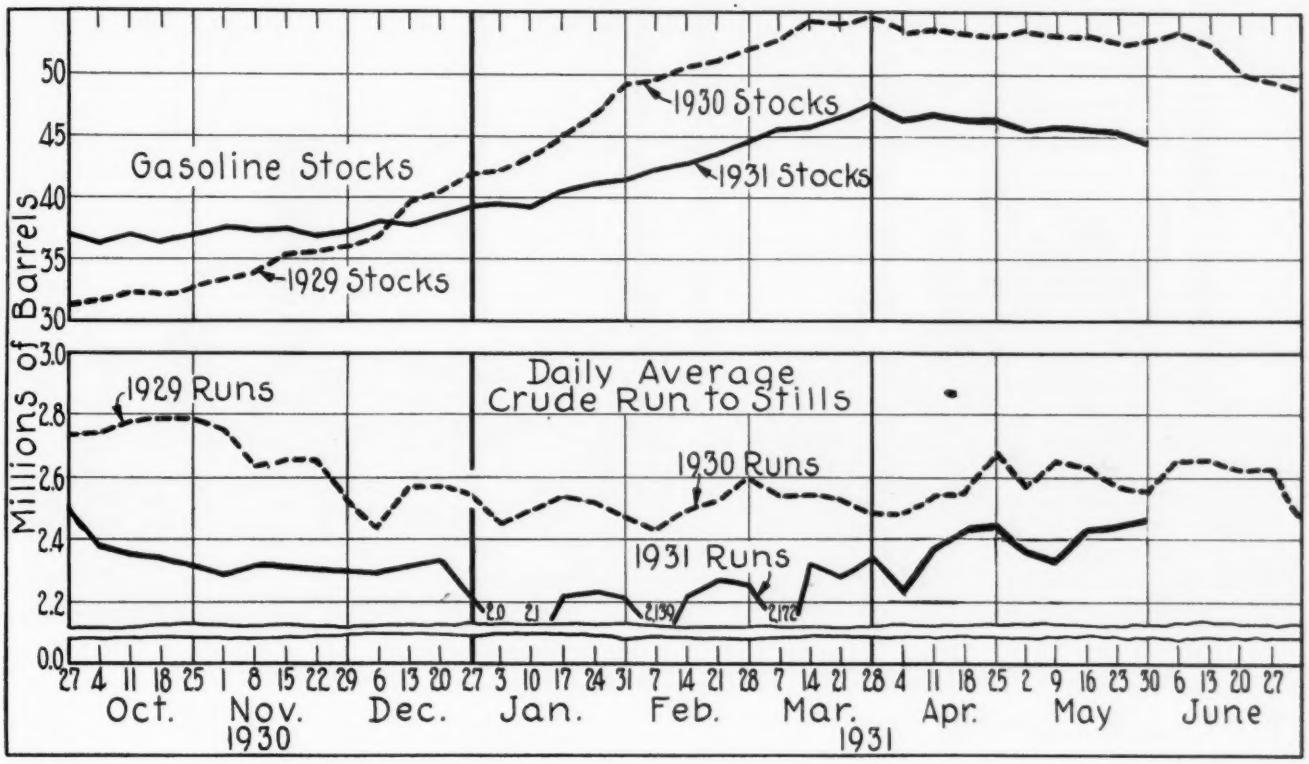
American Petroleum Institute directors, after a trip through East Texas, June 2, were to hear a similar proposal from Robert R. Penn, their production division vice president, at the division's semi-annual meeting in Dallas, June 3.

Oklahoma, Kansas

PRORATION will continue for June on the same basis in Oklahoma as it has been the past three months, with total allowable for the state of 550,000 barrels. The state corporation commission took this action on May 29.

While the Oklahoma City field was left unchanged from the proration plan that has been in effect during May, with total of 175,000 barrels allowed, it was made clear to the commission that the actual demand is much less. Purchasing companies nominated total takings of 157,000 barrels for June.

U. S. Crude Runs and Gasoline Stocks as Reported Weekly by A. P. I.



Gasoline Stocks Reduced 654,000 Barrels

By Telegraph

NEW YORK, June 2

GASOLINE shipments from refineries increased during the last week of May in preparation for the heavy consumer demand of the week-end holiday.

Stocks of gasoline at refineries reportly weekly to the American Petroleum Institute were reduced 654,000 barrels. Total stocks at the close of the week were 44,795,000 barrels. In the past four weeks the total reduction in gasoline stocks was 818,000 barrels.

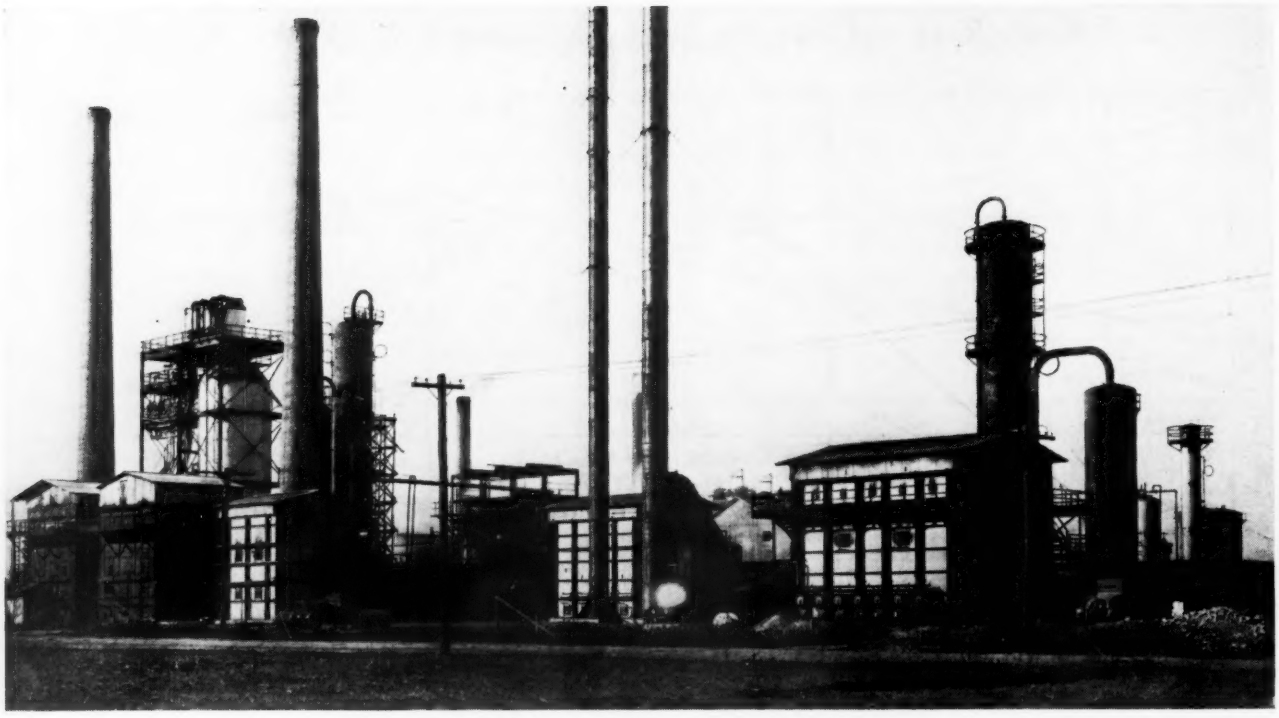
Every refining group except the Louisiana-Arkansas and Rocky Mountain groups reduced gasoline stocks during the week. The Texas group cut stocks 314,000 barrels. East Coast and California groups each drew more than 100,000 barrels from their stocks.

Production of cracked gasoline was reduced 14,500 barrels during the week to 461,900 barrels per day.

Refiners increased their runs of crude to stills 32,900 barrels daily average to 2,474,600 barrels per day. Largest increases were reported by California, Texas and East Coast groups.

Current Refinery Operations

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks (Thousands of Barrels)				Cracked Gasoline Production		
						Gasoline	Gasoline	Gas & Fuel Oil	Gas & Fuel Oil	% of Total Capacity Reporting	Daily Av. Production (Barrels) Week Ended	
		May 30	May 23	May 30	May 23	May 30	May 23	May 30	May 23	May 30	May 30	May 23
East Coast	100.0	496,700	485,000	81.1	79.2	8,267	8,414	8,738	8,580	90.3	87,200	88,700
Appalachian	93.8	96,600	91,400	72.9	69.0	1,600	1,653	1,140	1,036	85.2	21,400	20,100
Ind., Ill., Ky.	97.5	324,700	336,700	85.2	88.4	6,380	6,432	3,784	3,671	95.2	84,700	91,300
Okla., Kans., Mo.	89.4	276,000	278,300	67.0	67.5	3,645	3,664	4,264	4,225	88.6	59,600	62,300
Texas	91.9	575,400	560,200	77.4	75.3	7,840	8,154	9,880	9,583	95.9	123,600	124,700
La., Ark.	98.3	176,200	160,100	67.3	61.1	2,383	2,336	2,427	2,389	97.7	32,900	31,100
Rocky Mountain	93.1	48,100	60,300	34.4	43.2	1,905	1,894	843	853	100.0	15,400	16,000
California	98.8	480,900	469,700	54.2	52.9	12,769	12,902	98,387	98,218	100.0	37,100	42,200
Total	95.7	2,474,600	2,441,700	69.3	68.4	44,795	45,449	129,463	128,555	94.4	461,900	476,400
Texas (Gulf Coast)	100.0	438,400	419,400	82.8	79.2	6,642	7,011	6,977	6,795	98.5	100,100	99,000
La. (Gulf Coast)	100.0	118,400	104,900	80.3	71.1	2,226	2,198	1,491	1,467	100.0	24,300	22,400



View of Champlin Refining Co. plant, Enid, Okla.

Gas Distribution Held Taxable by State

WASHINGTON, June 1.—Natural gas enters state commerce when it leaves high pressure mains for the low pressure distributing systems. The U. S. Supreme Court has handed down such an opinion in a tax case style East Ohio Gas Co. vs. Ohio Tax Commission.

An Ohio statute lays a tax upon the distribution of natural gas for light, heat or power of so much on gross receipts, excluding therefrom all receipts derived "wholly from interstate business." The question was as to whether the tax commission had transgressed the rule that no state may tax interstate commerce.

The court said that the distribution of gas through what are known as consumer pipes was state business. The high pressure lines bringing gas into a state, even when gas produced within the state is carried in the pipes that bring in gas from outside of the taxing state, is interstate commerce.

When the gas company puts the gas into the low pressure pipes from which consumers take what they want as, if, and when they want it, it breaks the "original package" so to speak and puts the gas into state commerce. The gas company sought to enjoin the collection of tax on the proceeds from distribution by consumer lines, claiming that the gas was still in interstate commerce. The lower and the highest court ruled against it, thereby, in substance, establishing the rule before stated.

The gas is brought under high pressure to the corporate limits of the fifty odd municipalities in which it supplies consumers. But when it goes into the local lines for distribution it becomes state commerce and subject to taxation by the state, regardless of the point of origin. The gas company, therefore, had to pay an occupation tax on all the gas distributed by it.

Straws for the Nest of Prosperity

New Hampshire textile mills increase operations, a few running 24 hours a day.

Sales of silk piece goods in April were the largest in any month in four years.

Empire Steel Corp. at Niles, O., puts 800 men back to work.

Youngstown Sheet & Tube Co. adds 300 sheet mill workers and laborers to payroll, starting up mills that have been idle.

Derby Oil Co. reports gain in earnings the first quarter of 1931 over first quarter of 1930.

Supreme Court to Rule On Calif. Gas Law

WASHINGTON, May 29.—The U. S. Supreme court is to rule on the constitutionality of the California gas law. Chief Justice Hughes announced May 25 that the case of the Bendini Petroleum Co. et al. vs. Superior Court of California will be assigned for hearing this fall.

In this case the Bendini company sought a writ of prohibition to restrain the court from interfering with its releasing gas to the air while producing oil at Santa Fe Springs. The case is expected to have far-reaching importance in indicating how far a state may go in restricting the production of privately owned oil and gas for the benefit of the general public without compensation.

Gasoline Tax Evasions Heavy Handicap To Established Oil Companies

By J. H. Hill

Counsel, The Texas Co., Mid-Continent Division

NOTHING offers a greater challenge to the legitimate petroleum business today than the gasoline tax. The challenge is to the producer and refiner because the tax increases the cost of gasoline and thereby discourages its use. To the legitimate marketer (the one who pays the tax) because he cannot meet the competition of the marketer who evades the tax. This is national—not local.

In the beginning the tax was comparatively innocent. It was very small, 1 cent per gallon, and consequently offered no inducement to fraud. From the standpoint of the state, the tax was ideal. It was collected almost automatically and without expense. The annoyance and cost of collection were forced on the marketer without compensation.

It aroused no complaint from the public, as it was added to the price or cost of the article. It was a painless tax. Some may have complained as to the price of gasoline, but there was no complaint against the tax.

The collection of large sums in taxes without cost or expense, and without complaint from the taxpayer, was something new in state taxation. As a result, every session of the legislature, regular or special, which found the state in need of funds for any purpose, increased the tax.

The money derived therefrom, originally devoted to highway improvement, has been diverted to many other purposes, including charity. Every legislator with a hobby has tried to provide the money for the hobby by increasing the gasoline tax.

The average tax throughout the United States now approaches 5 cents per gallon—being in some localities as much as the retail price itself after deducting the tax. The increases in the gasoline tax were made without serious opposition. The marketer, under the delusion that he passed the tax on to the consumer; the producer and refiner, failing to appreciate the state was discouraging the use of the article; the consumer, not realizing that much of the cost of the article was tax, all sat idly by while the legislatures voted increase after increase.

MR. HILL has made an intensive study of gasoline taxes and their collection. He shows here that the evasion of taxes and their theft by unscrupulous dealers after they have been collected from the public, constitute one of the heaviest handicaps under which the reputable oil company labors today. He urges the oil industry to take up the battle for strict enforcement of gasoline tax laws by state authorities.

From the beginning of taxation, exorbitant taxes have produced evasions. The gasoline tax is no exception. At the present the profit from evasion is from $300 to $500 a tank car; $50 on a thousand-gallon truck. Evading the gasoline tax (being continuous, going on both day and night, silently and unnoticed by the citizenry) is more profitable than bank robbery, and far less dangerous.

Recently the governor of Pennsylvania announced there was more than five million dollars known gasoline taxes uncollected in that state. He did not estimate the evasion where no report had been made—probably a much larger amount.

Dwindling receipts and increasing delinquency of known taxes developed in other states. Marketers who were efficient, economical and law abiding found they could not meet the competition of those who did not pay the tax, because the advantage on the side of the criminal tax evader was too great, and attempts to meet prices offered by the tax evaders were at the bottom of many of the disastrous gasoline wars.

Recently the states and the legitimate marketers began to realize at the same time that there had grown up a veritable Frankensteinian monster which was devouring the states' revenue and the tax paying marketer simultaneously. While the state was losing its revenue, the honest and industrious were being forced out of business and the tax evader was growing affluent. This brought about the hectic efforts to pass gasoline tax enforcement laws in the closing hours of some of the state legislatures.

These new laws provide drastic penalties for violations and require more accounting and many reports to the tax collecting authorities. Compliance will materially increase the cost and expense of conducting business, but at present there seems to be no alternative. The evils which have crept up on the industry must be fought by the means at hand until the public can be shown that the real remedy is tax reduction.

If the law is enforced and the tax collected, it will save the state's revenue and at the same time save the life of the legitimate marketer—the one who will not stoop to fraud. If not

enforced, the only effect will be to increase the cost to the legitimate dealer and give the tax evader a greater competitive advantage.

The demand that these laws be enforced is growing, and the public is taking an interest. This is especially true of the county commissioners of Oklahoma, who seem to realize if the tax is to live it must be collected. In a recent letter to the other commissioners of the state, G. H. Scudder, chairman of the Washington County board, in discussing the gasoline tax, said: "If the revenue is to be saved, a way must be found to meet and suppress every form of evasion." With this every legitimate marketer in the state agrees.

If the petroleum industry is to survive, it must oppose every increase in the gasoline tax and demand and secure reductions. It is being taxed to death. Some of the producing states are leaders in this saturnalia of taxation, increasing the gasoline tax and levying other unjust and discriminatory taxes on the industry, thereby setting an example for the non producing states and countries.

No other article produced in America is so heavily and exorbitantly taxed; no other article of daily use has been subject to a sales tax in every state. If the state is to save the revenue from this tax, and at the same time enable those in the trade who will not stoop to fraud to survive, then the state must collect the tax to the last penny. This is only common honesty, and to survive the state must be honest. If it cannot do this, the tax must be repealed. The state cannot perpetrate such an injustice on the law abiding as results from the failure to enforce this tax. It is impossible to conceive of a greater injustice.

Oklahoma Marketers Planning Methods Of Stopping «Gas» Tax Evasion

Staff Special
TULSA, May 29.

REPUTABLE gasoline dealers in Oklahoma are going to make it their business to see that the state enforces its recently enacted gasoline tax evasion law, which becomes effective July 11.

They feel that for the first time the state has a law with teeth, and will have the revenue with which to obtain the man power necessary to an adequate collection of the gasoline tax. The new law makes each individual who collects a gasoline tax an employe of the state, and if that tax is not paid to the state, embezzlement charges can be filed.

Final plans for the co-operation of these oil companies and the state officials who will have charge of the tax collections will be drafted at an open meeting of oil marketers at Oklahoma City, Friday, June 5.

Several methods are employed in the absolute evasion of the tax. One of the more common methods on a large scale is the transportation via tank truck of gasoline from refining centers in adjacent states delivering the gasoline to retailers and pocketing all the tax unless the retailer gets his cut for handling the gasoline. One refinery executive estimated recently that 50,000 gallons of gasoline moved from north Texas into Oklahoma each day under this plan.

Some small refiners in Oklahoma are known to be a party to this tax evasion. Reports indicate that in one or two instances these refiners have ceased to ship by tank car almost entirely. One plant is reported to supply eight to ten trucks with gasoline daily. Another refiner has a storage plant and tank truck loading rack near his refinery.

The combined importation of gasoline, and the practice of refiners in selling to any and all tank truck drivers, has been responsible for the larger number of small tank trucks which scurry over the highways at all hours of the day and night—but which are more prevalent between midnight and early morning.

These small trucks, holding 200 to 400 gallons of gasoline, travel the highways bootlegging the gasoline. The driver buys from the friendly refiner at the prevailing tank car prices or a fraction above that price, and sells to the retailer at cost. He of course collects the tax from the retailer and pockets it. The retailer gets the gasoline at below the posted tank wagon prices, so he is satisfied. The driver gets his 5 cents a gallon, and on a 300 gallon dump, for instance, makes $15. He's satisfied! The refiner sells his gasoline for cash to continue operating his little plant.

A representative of a major company in Tulsa recently traversed the Tulsa-Okmulgee highway two nights after midnight each time. He saw several of these little trucks, and in two instances saw them making dumps. The driver knows when a retailer wants gasoline because a little light is left burning in the station.

Then there is another method of absolute evasion when the gasoline is moved via tank car. One example will suffice. A refiner was reported to have told a jobber recently over the phone —and the jobber incidentally was a price cutter—that he was shipping him a car of kerosine, and added, "if that kerosine runs over 400 end point when you get it, though, turn it down."

The invoice read kerosine on which there was no tax. But if the buyer didn't get a 400 end point "kerosine," he was to reject the car. And 400 end point kerosine is—you're right. Gasoline.

Then there are the methods of partial evasion of the gasoline tax. One method is to buy natural gasoline and make a

blend with either kerosine or naphtha. The tax is paid on the car of natural gasoline—but not on the naphtha or kerosine. This blending is done either by the bootlegger or the consignee. One refiner has a tank truck loading rack near his plant, and sells naphtha. A short distance down the road is a natural gasoline plant.

Then there is the exemption allowed farmers for the gasoline used for agricultural purposes.

One little trick is for the truck driver, in filling out the affidavit to leave a space in front of the amount of gasoline sold. After the farmer signs the affidavit, the driver uses that space to "increase the sale." For example, he makes a 50 gallon delivery. The farmer signs for that, but the affidavit which the state receives shows the farmer bought 150 or 250 gallons of gasoline. These affidavits reach the state officials every day in large bundles. It would take quite a force to check up on all of them under the present system.

The agent for a major company recently reported he sold 901 gallons of gasoline in one day—of which 900 gallons were tax exempt. One gallon on which a tax of 5 cents was due!

A few retailers report only a portion of their gasoline sales. They make reports to the state officials, and these reports are accepted because again the state is handicapped in its checking system.

It is amazing the amount of gasoline some school district buses can consume in a month. The gasoline so used is tax free. Instances have been recorded where a jobber who has "the bus concession" would sell a tank car or more of gasoline in one month for that school district's bus!

And the old tractors are in demand. Cases have been reported where a person would buy an old tractor from the dump heap, haul it home and have it registered, so he could claim agricultural exemption.

Then the talk the writer had with a well known lawyer in Tulsa recently:

"I figure I have saved $180 each on my two cars the past three years," said this lawyer.

"I buy all my gasoline," he continued, "for the farm and get it tax free. Of course very little of the gasoline is used on the farm."

A well known refiner in the western part of the state was approached recently by a truck owner with the proposition that he would haul the gasoline free of charge to that refiner's customers!

Finally, the case on file of the man who posted a $1500-bond as being a jobber in a certain Oklahoma town. He bought a car of gasoline from a certain refiner at one price, then sold it, tax paid by purchaser, to a jobber in the same city, but at a price more than a cent under the price he paid for the gasoline.

The jobber made him place on the invoice the fact that he (the jobber) had paid the tax.

State officials found this man did not have a business in the city where he had listed his bulk plant as being located. Information May 28 was that a suit was being filed against this individual as well as several others.

Instances also have been recorded where jobbers have had their truck drivers and other employes made notaries—which simplified the partial return stunt.

It is small wonder the reputable companies have rallied to the support of the new law. With such a large quantity of gasoline handled "tax free," price cutters have sprung up everywhere. The reputable company has continued to send in its check each month for the gasoline tax collected, and naturally under those conditions could not operate at the same cost as the price cutter. And the new law will make this reporting even more burdensome and expensive.

Howard M. Hart

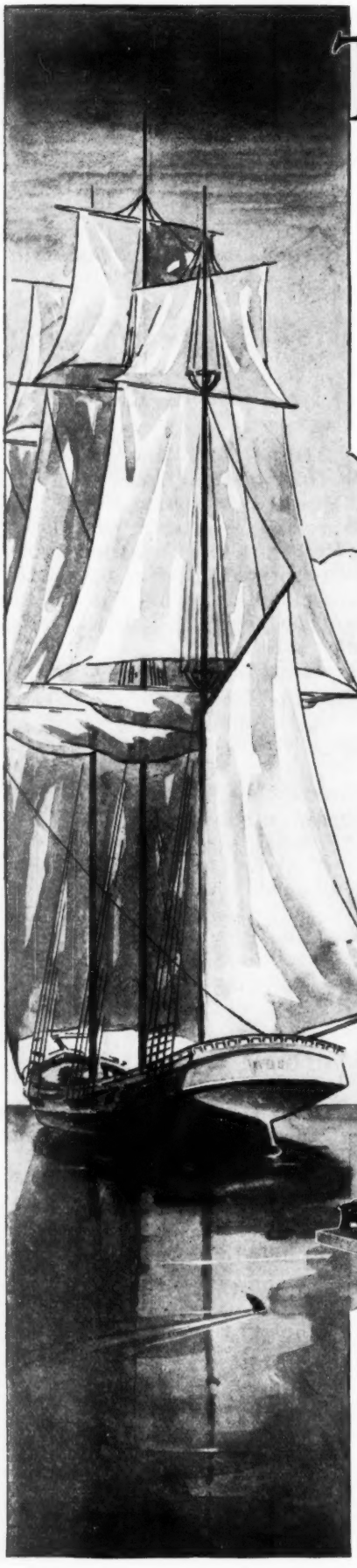
Howard Hart Appointed Valvoline Executive

DETROIT, May 16.—An oil sales and aviation route led Howard M. Hart to the vice presidency of the Valvoline Oil Co., the oldest continuous refiner and marketer of Pennsylvania oil. In his new capacity, Mr. Hart is in general charge of sales.

Most of his 15 years in the oil business has been spent in selling. When he first joined the Moore Oil Co. of Cincinnati in 1916, it was as salesman. Later he was made manager of the paint department.

When the war came, he enlisted in the United States air force. After the war he returned to Cincinnati and joined the Refiners Oil Co., of Dayton, O., as its Cincinnati manager. After five years, he was appointed vice president and general manager of the Refiners Oil Corp., under which name the southern Ohio division of the company operated. During this time, he established many branches in southeastern Ohio and northern Kentucky for this company. Early in 1931, the company was acquired by the Standard Oil Co. of Ohio.

Although the Atlantic Division offices of the Valvoline company remain in the Chrysler Bldg., New York City, the headquarters have been transferred to 3004 Carew Tower, Cincinnati. Officers are: E. W. Edwards, Cincinnati, chairman of the board; H. W. Edwards, president; C. J. Leroux, vice president and general manager; and J. H. Garlough, sales manager.



The Tallest Ships were mere *playthings of Calm and Storm*

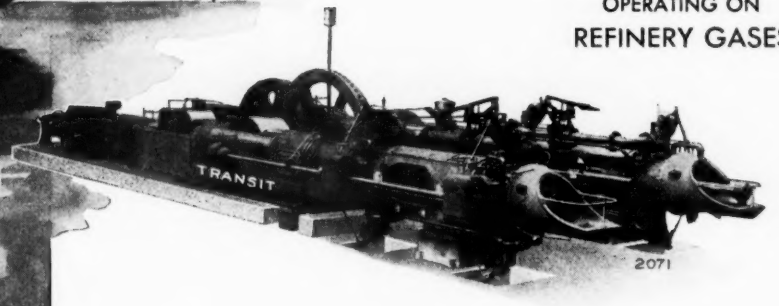
In those days when commerce must wait for a favorable wind, which, so often failed with the voyage half over and left the heavily laden ship to idle for days and sometimes weeks, in a dead calm— trade must sit and twiddle its thumbs until the argosy made port. Time and money losses due to delay were accepted in patient tolerance.

But we are living today in an age that MUST carry on— MUST produce despite all obstacles.

Pumping machinery must be so designed and constructed as to meet Calm and Storm with unswerving constancy. This is especially true for that most particular of all services— pumping hot oil.

Investigate this--

TRANSIT
Gas Engine Driven
HOT OIL PUMP
OPERATING ON
REFINERY GASES



BEAUMONT, TEXAS
E. L. Wilson Hardware Company

SALT LAKE CITY, UTAH
F. C. Richmond Machinery Co.

TULSA and MID-CONTINENT FIELD
Frick-Reid Supply Corporation

NATIONAL TRANSIT
PUMP & MACHINE CO.
OIL CITY, PA.

PHOENIX, ARIZ.
Pratt-Gilbert Co.

LOS ANGELES
Republic Supply Company of California

ST. LOUIS, MO.
Reeves & Skinner Machinery Co.

NEW YORK PHILADELPHIA CLEVELAND PITTSBURGH LOS ANGELES HOUSTON TULSA NEW ORLEANS

First Aid Training Pays Dividends In Prevention of Accidents

WARREN, Pa., May 28

FIRST aid training is good accident prevention insurance, J. J. Forbes, of the U. S. Bureau of Mines safety division, told the Fire and Safety Marshals Association of the National Petroleum Association at the annual meeting of the group here today.

Mr. Forbes showed that some companies have begun to keep records to show whether men who are injured have received first aid training. These records are giving astonishing data. At the Gulf Refining Co. plant at Port Arthur, Texas, for example, the records over an extended period show that the man who has not had first aid training has six accidents to one for the man who has been trained.

The explanation, of course, is that first aid training impresses on the workman the dangers of careless work and the pain and loss of money which accidents cause. Long years of experience in seeking to prevent accidents have shown that there is no panacea but that, if the worker can be taught to think about his job and what may happen if he does it carelessly, he will have few accidents.

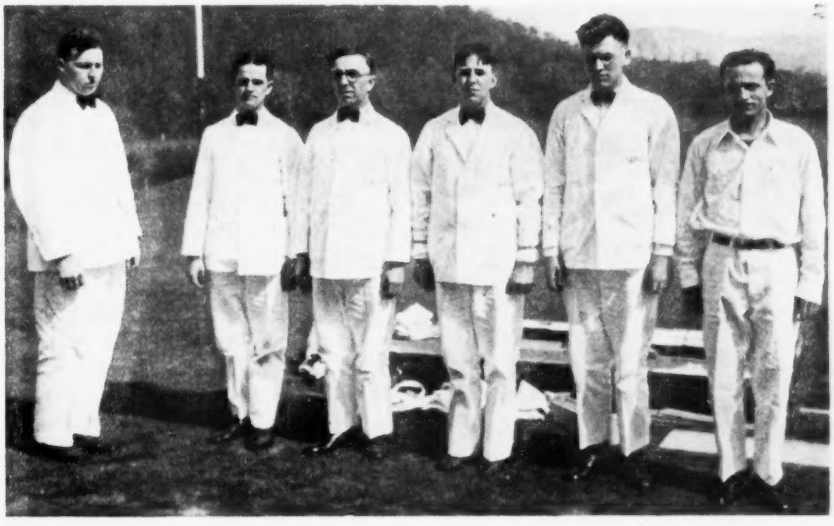
A high tribute to the four first aid teams which competed for the N. P. A. bronze placque in the annual first aid meet was paid by Mr. Forbes. He invited the association to select a team to enter the next international first aid meet, saying that their work in the contest indicated they would win a high place in any group of teams. In view of the fact that training was begun in the Western Pennsylvania fields only three years ago, while it has been in progress for some 20 years in some of the metal and coal mining industries, he said the oil company teams had made remarkable progress.

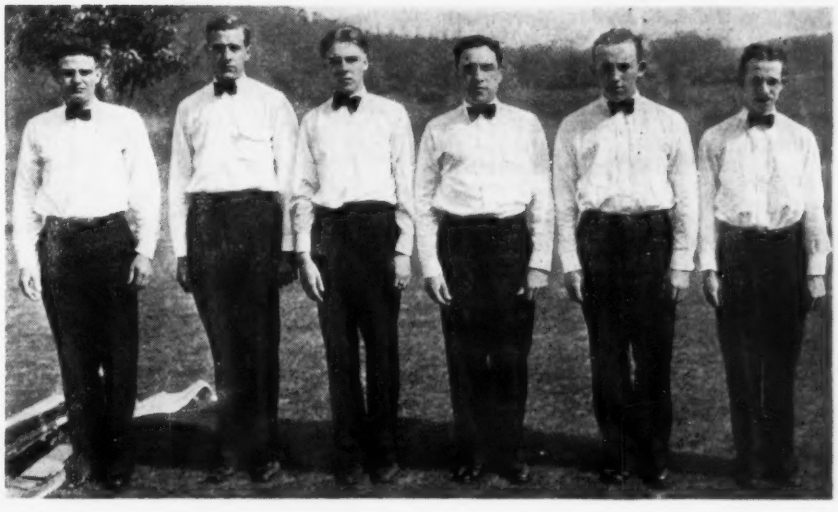
Standard Oil Co. of Ohio No. 2 refinery team won first place in the meet, with a score of 98.13 per cent for the three problems. Kendall Refining Co. was second with a score of 97.46 per cent, Standard Oil No. 1 was third with a score of 96.6 per cent and Conewange Refining Co. fourth with a score of 96 per cent. There was a difference of less than two per cent between first and fourth, much better than last year.

All officers of the Fire Marshals Association were re-elected for another year. They are: James H. Herbert, Standard Oil Co. of Ohio, president; H. A. Fruth, Freedom Oil Works, vice-president; and Sherman Brown, Mutual Refining Co., secretary-treasurer.

It was voted to hold the next annual meeting at Oil City the last week of May.

Reports from chairmen of va-





Above—Standard Oil Co. of Ohio No. 2 refinery team, winner of the contest. Left to right, R. Graham, captain, J. Esson, Joseph Komorosky, T. Looby, George Koelliker and Al. Pence

At right—Kendall Refining Co. team which took second place. Left to right, Boyd Heman, captain, L. L. Akerlind, E. C. Walker, Phil Rich, C. M. Stone and Franklin Waldo

rious districts in the Western Pennsylvania field indicated progress is being made in fire and accident prevention both in organizations within the various plants and in cooperative work among the various fire marshals who are members of the association.

In the Oil City group, John Cavanaugh, of the Pennzoil Co., reported that all plants and the Oil City fire department have standardized all fire fighting equipment so that connections are interchangeable. In case of a fire at any plant it is possible for neighboring plants and the city equipment to hook onto all available outlets without delay.

Frequent inspections to discover hazards are made at plants. At the Pennzoil plants, for example, all foremen join in a weekly inspection which is followed by a meeting to discuss what was seen and make recommendations to the management.

S. M. Wolbert, of the Kendall Refining Co., reporting for the Bradford district, said that all fire marshals in the group meet monthly at one of the plants for a cooperative inspection. It has been found that these inspections lead to the discovery of some hazards which might not be apparent to the individual marshal. He reported that the group is quite encouraged by the fact that repeat inspections show that most of the early recommendations have been complied with.

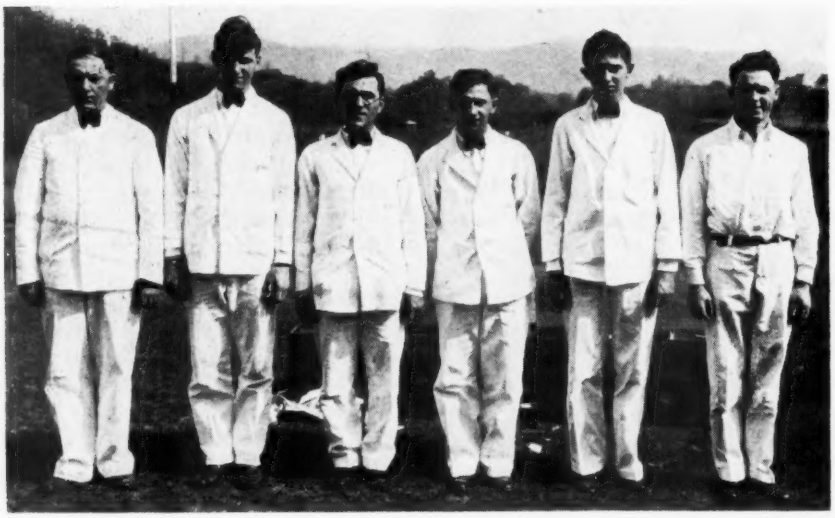
E. M. Lyons, president of the National Petroleum Association; James H. Herbert, president of the Fire & Safety Marshals Association; and Richard Wotowich, trustee of the fire and safety department of the N.P.A.

At the Kendall plant there is a monthly safety committee meeting, at which any accidents in the previous month are discussed. Some of the plant workmen are present at each of these meetings, the men being invited in rotation. At these meetings injured men are asked to report how they were hurt and how the accident could have been avoided. This is done in a way which will not embarrass the injured man.

Earl V. Helm, of the Canfield Oil Co.'s Coraopolis plant, reported that at his plant it is believed a clean plant is a safe plant in which to work. As a result much effort is expended in good housekeeping. At the beginning of each month the department which kept its area the cleanest is awarded a banner which it retains for a month.

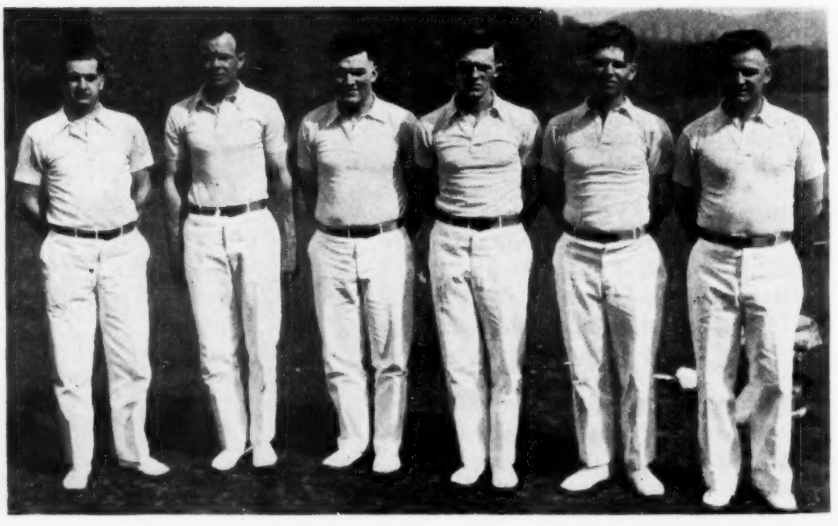
Each department which does not have a lost time accident

(*Continued on Page* 45)



Conewango Refining Co. team at right. Left to right, C. H. Landberg, Captain; K. B. Brogan, N. M. English, K. S. Bailey, S. A. Sharman and A. C. Barr

Standard Oil Co. of Ohio No. 1 Works team above. Left to right, W. A. Sanders, Captain, Michael J. Durik, Andy Pockvatila, Edward Tabor, George Scott and Henry Hadden



ADVERTISING PAGES REMOVED

Oklahoma City Proration Continued On May Basis for Another Month

OKLAHOMA CITY, May 30

ALTHOUGH nominations of crude oil from the Oklahoma City field made by purchasers to the state corporation commission on May 28 totalled less than the amount that has been taken in recent months and less than the allowed production of the past two months, the commission continued from the month of June the same six per cent allowable production that has prevailed.

The commission found, on April 20, that the "reasonable market demand" for Oklahoma City would not exceed 175,000 barrels daily and it fixed proration allowance at six per cent on wells not illegally overproduced, for the entire month of May. The hearing May 28 was partly to determine the outlet and partly to hear the application of Wirt Franklin, large operator in the field, for differential of percentage allowable according to producing sands.

The influence of East Texas is plainly seen in the nominations for June and subsequent months, which totalled 157,100 barrels. There has been a decided falling off in recent weeks in the amount of oil taken from the field. While the allowed production is some 18,000 barrels more than the amount pipeline companies said they would take, it is expected that production will accommodate itself to outlet for the reasons that there is no disposition on the part of anyone to store oil and there is nothing in sight to indicate that anyone will offer his production at a price attractive to bargain hunters.

The nominations of the various companies were obtained by calling heads of pipeline and buying companies to the stand and asking them what they intend to do. In each case they also were asked to put into the record the amounts they ran in April and May.

First witness was R. S. Ellison, president of the Stanolind Crude Oil Purchasing Co., one of the major buyers in the field. Mr. Ellison said his company bought an average of 41,088 barrels daily in April; 39,443 barrels daily for the first 25 days in May.

Purchases are being further reduced, he said, the estimated daily buys for the next four months being 18,500 barrels for June; 18,500 to 25,000 barrels daily for July; 30,000-35,000 barrels for August and 30,000 for September. Reason for curtailment: the company is emptying its pipeline from Wyoming to Kansas City, 720 miles long and at the rate of 20,000 barrels daily from this source it will require all of June and most of July. East Texas hasn't as yet influenced the buying policy of Stanolind, Mr. Ellison said, but "may before we get through."

FRED K. HASKELL, Empire Pipe Line Co., said that daily average purchases of the Empire in April were 31,317 barrels and for the first 24 days of May, 34,735 barrels. He estimated that the company would take 33,000 barrels daily over June and the three months following.

The company has been running about 6000 barrels daily for the Continental Oil Co., Ponca City plant, and this is to be continued over June and July. By August Continental expects to have its own gathering system ready; it already has a trunk line to Ponca City. The amount run for Continental is included in the total figures of the Empire.

Magnolia Petroleum Co., once a large buyer in Oklahoma City, has almost dropped out. Its purchases for April were 2813 barrels daily and for the first 24 days in May 1051 barrels. Superintendent Stewart said the company probably would not buy more than 1000 barrels over June, July, August and September. East Texas is the reason.

Magnolia runs oil for the Tidal Refining Co. The average was 3000 barrels daily for April and May. No Tidal representative was present to say what that company would do, but it is certain to hold purchases at a low figure as it is getting into a strong buying position in East Texas.

CARTER Oil Co., subsidiary of the Standard Oil Co. of New Jersey, also will reduce purchases. O. L. Doyle, of that company, said purchases for April were 16,490 barrels daily and 17,086 for the first 20 days in May. He estimated purchases of 10,000 daily over June and succeeding three months. Some of the company's customers have reduced takings, said Mr. Doyle.

Shell Petroleum Corp. is one of the few that will increase its purchases. Ralph B. Roark, general field superintendent, said the company expected to buy 12,000 barrels daily over June, July, August; would make no estimate for September, but thought it might be about the same. In April the company took an average of 7788 barrels daily; in May it stepped up to 11,565 for the first 26 days. Shell's own production in the field, under proration, is less than 300 barrels daily.

Sinclair Refining Co. expects to maintain a high rate of purchases over June-September. E. B. Marlow said the company bought 40,785 barrels daily in April and averaged 53,264 barrels over the first 24 days in May. His estimate for June and the three months after was 50,000 barrels daily. Under proration, Sinclair Oil & Gas Co. produces about 8400 barrels

daily of the amount taken by its sister company.

Anderson-Prichard Oil Co. runs only its own production. Under the present allowable, that amounts to 1000 to 1200 barrels daily, said J. S. Anderson.

The Indian Territory Illuminating Oil Co. had one customer to whom it sold oil. The amount so handled in April was 7660 barrels daily and 2491 barrels average for the first 24 days in May. It will deliver 2500 barrels daily the first seven days in June. After that, it has no customer aside from the other purchasing companies, said R. L. Gordon, vice-president.

J. R. Travis, Capitol Producing & Refining Co., says his company takes only its own production. That has been averaging 1000 barrels daily. He said that if he could get a pipeline connection, he would cease taking his own oil; otherwise, the Capitol will represent an outlet of about 1000 barrels per day.

Century Petroleum Co. is not a purchaser. It handled 3000 barrels daily in April; 900 barrels in May and for June-September will probably take 500 barrels daily, F. G. Blackwood, pipeline superintendent said.

Crude Oil Transportation Co. bought an average of 1150 barrels daily from Oils, Inc., over April and May and will take up to 3300 barrels over the next four months, if it can get the oil, said John Wilkinson, pipeline superintendent.

Another small purchaser that is willing to take more oil is Peveto & Peacock, who operate a refinery in the field. John H. Peacock said the company has made a contract whereby it can sell the products of 2500 to 3000 barrels of crude oil daily.

George A. Dye, Wilcox Oil & Gas Co., said that including the company's own production it took 1448 barrels daily from the field in April and 1728 barrels the first 17 days of May. He said the company will take all it can get up to 10,000 barrels daily over June-August.

Continental Oil Co., according to E. H. Skinner, manager of the pipeline department, took an average of 2900 barrels daily in April, 2650 daily the first 24 days in May, from Operators Oil Co. This is in addition to the 6000 barrels which the Empire has been delivering.

Mr. Skinner estimated their total takings for June, July and August would be 13,000 barrels daily and 10,000 in September. The shipments in the last two months will go through the Continental's lines. It will continue to patronize the Empire at the same figure it has been through June and July.

Blackwell Oil & Gas Co. is not in the market for Oklahoma City oil "under present conditions," said Rex H. Winget, of the Cushing Refining & Gasoline Co., an affiliated company. The company heretofore has taken small amounts by tank car. Mr. Winget said the company "can't come out on oil" at present prices; said he would rather see a raise in the price of refined products than a cut in crude.

Prairie Oil & Gas Co., once a large purchaser in this field, now buys no oil here or elsewhere. It handles its own production and that of the Mid-Kansas Oil & Gas Co., the latter on exchange basis. This gives an outlet for about 1300 barrels daily.

Champlin Refining Co. stated to the commission that for purposes of the hearing it wished to be noted as constituting no outlet for the present. Suit was instituted against the company by the attorney general, charging it with overproducing its wells. Receivership was asked for the four wells of the company in the field and injunction against the company. The wells are shut in pending disposition of the case.

The attorney for Champlin said that while the company is not admitting that the charge is true, if the suit should be decided against it the effect would be to take its wells off production. Therefore, for purposes of ascertaining the outlet for the field, Champlin wished to be recorded as not in the market.

In view of the reduction in runs that has been going on for the past three weeks, production of the field has dropped. The average for the six days May 24-29 inclusive was 117,851 barrels.

The commission, in leaving the field where it was for the month of June, also kept proration for the state at 550,000 barrels daily. One reason why it was unwilling to change the schedule in Oklahoma City was to give it time to study the proposal of Wirt Franklin with reference to proration by producing sands. Testimony was taken on this.

The Franklin contention is that there are four distinct "sources of supply" in the field, which he calls the Arbuckle lime zone, the lower Simpson sand pool, the South Wilcox sand pool and the north Wilcox sand pool. The latter is the zone that has had the sensational completions, wells gauging at the rate of 50,000 barrels and better per day.

Mr. Franklin told the commission tht the present method of prorating the wells over all the field on the same basis was discriminatory and inequitable, that within a short time the closely-drilled north Wilcox sand area would have 90 per cent of the total market for the field.

This application was opposed by a majority of the companies in the field. The contention was made that to permit the lime area and the Simpson sand to have a larger allowance than the Wilcox would result in migration of oil and gas from the latter into the favored zones.

More Penalty Suits in Texas Charge Waste

DALLAS, May 30.—Additional penalty suits charging violation of the conservation statute against waste of oil and gas in Texas have been filed in the Rusk county court district court at Henderson, it is announced by Fred Upchurch, assistant attorney general. Suits were filed against Luling Oil & Gas Co., and the Horseshoe Syndicate, operating in the Kilgore area of the Sabine Uplift region.

Penalty suits were filed as the only course open to the attorney general's department in the face of injunctions pending at Austin, in which both companies are seeking to restrain the Railroad Commission of Texas from enforcing proration orders against them.

Lockport Crude Price Cut by Vacuum

HOUSTON, May 28.—Vacuum Oil Co., which controls most of the production in the Lockport (Lake Charles) field in southern Louisiana, posted reductions of five to 25 cents a barrel, effective May 26, it was announced at Houston offices. It abolished the graduated gravity scale for Lockport "B" grade Coastal crude, posting a flat price of 55 cents a barrel for it, and cut "A" grade to 60 cents. No reductions were posted by it or other purchasers in other Gulf Coastal fields.

Mark L. Requa Offers Aid In California

LOS ANGELES, May 29.—Mark L. Requa, former director of the oil division of the U. S. Fuel Administration during the war and chairman of the 1929 Colorado Springs oil states meeting, has offered his assistance in reaching a settlement of oil difficulties in California.

Mr. Requa has organized a California Oil Survey Committee composed of himself and four prominent business men outside the industry. In a letter to oil men of the state he offers the services of the committee in suggesting a solution of present problems.

Requests are made in the letter for a statement of facts to aid the committee and suggestions for correction of conditions. The committee offers to study the statements and recommendations and give an advisory opinion. A delegation from the recently organized Oil Producers' Sales Agency was invited to confer with the committee.

In addition to Mr. Requa the committee, as organized, is composed of Allen C. Balch, Los Angeles, former president of the San Joaquin Light and Power Corp.; Dr. L. D. Ricketts, Pasadena, former president of the Inspiration Consolidated Copper Co. of Arizona; Harry L. Fair, San Francisco, president of Peirce-Fair & Co., financiers; and Roy N. Bishop, San Francisco, former president of the Sperry Flour Co.

Government Files Suit To Quiet Osage Titles

TULSA, May 30

AFTER delaying for several weeks from the time trouble was first indicated, the United States district attorney for northeastern Oklahoma finally filed a suit to quiet titles in the Osage reservation.

This move was made after owners of surface rights in the Osage had taken the aggressive and filed suits asserting their claim to the minerals. Something like a half million acres, a substantial percentage of it producing oil and gas, are affected by the litigation.

Because of the delay on the part of the government in coming to the rescue of lessors and of its incompetent Indian wards, some oil production has been cut off from market. Purchasing companies are paying for the working interest in the oil only when assurance is given by the producer that he will be liable in the event the suit is decided against the Indians. This means, in the case of the small operators whose financial position is weak, a bond and some of them are unable to make such bond. The royalty being withheld, as the government has not given assurance that it will indemnify the purchasing companies. Hence, the income of the Osages will suffer.

Minerals under lands in the Osage reservation were held in trust for the tribe for a period of 25 years. This period expired April 8, 1931. Subsequent acts of Congress extended the trust period to 1958. Certain lands were sold to farmers and others by the Indians, with the approval of the Interior department and it is now claimed by these purchasers that they bought with the understanding that at the end of the 25-year period they would be entitled to the minerals.

Several suits have been filed by these claimants. One, termed a suit on behalf of all who purchased surface rights prior to March 3, 1921, when Congress passed the first extension act, is in the name of Henry Adams, of Hominy. F. E. Riddle, Tulsa attorney, is leading the fight for the claimants. He was to go into federal court June 1 and ask that a receiver be appointed to impound all funds derived from Osage lands in question. Another suit was brought by him on behalf of all who purchased lands since March 3, 1921, and on behalf of the Osages of the competent class.

The government's suit asks that the extension acts be sustained and that the claimants be restrained from filing additional suits. It named 58 defendants and said there were between 3500 and 4000 other claimants to the oil, gas and mineral rights.

The Indian bureau last week approved a $25,000 appropriation to retain special counsel for the Osages.

May Ask Indian Lease Form Revision

TULSA, May 29.—Demands that the advance royalty feature contained in lease contracts on lands of the Five Civilized Tribes in Oklahoma be abolished has led to movement in the Mid-Continent Oil & Gas Association, Kansas-Oklahoma division, for revision of the departmental lease.

Advance royalties now paid range from 15 cents to $1.00 per acre each year. Besides this the rental of one dollar per acre per year is paid. If the lease proves non-productive, this amounts to a double rental for the time it was held. If it produces, the advance royalties are deducted in making royalty payments.

There is also a demand by lessees that the contract form be modified to permit the removal of buildings and improvements placed upon the land at expiration of the lease. They are now treated as permanent fixtures once they are erected.

The Mid-Continent Skyline

By Lawrence E. Smith

SOMEONE, unknown by name—more's the pity—has set in motion around Tulsa the following paraphrase of the words of the Psalmist. The reference is to Oklahoma's governor, "Alfalfa Bill."

"Murray is my shepherd.

I am in want.

He maketh me to lie down on Gross Taxes.

He leadeth me beside silent oil derricks.

He restoreth my doubt in the Murray program.

He leadeth me in the path of investigations for his own sake.

Yea, though I walk through the Valley of the Shadow of Cement, I do fear evil, for thou art against me.

The politicians and the contractors, they frighten me.

Thou preparest a reduction in my salary and an increase in my taxes.

Thou anointest my income with heavy appropriations.

My expenses runneth over my income.

Surely, unemployment and poverty will follow me all the days of the Murray administration,

And I will dwell in a rented house, sowing seeds that will not germinate,

Forever."

Note: the reference to seeds was prompted by the Murray free seed program for farmers who were drought sufferers. Farmers complained that in many cases the seeds were no good.

* * *

S. W. Darling, assistant superintendent of the Dallas refinery of The Texas Co., has been transferred to the Casper refinery to act in the same capacity.

* * *

L. E. Phillips, executive of the Phillips Petroleum Co., delivered the commencement address at Phillips University, Enid, Okla. At the same ceremony, Mr. Phillips was given the honorary degree doctor of laws.

* * *

The U. S. Geological Survey, Muskogee division, announces the addition of two assistant petroleum engineers who will share in the duties of supervising operations on leased public lands. Glenn E. V. Griffith, formerly of the United Natural Gas Co., which operates in New York and Pennsylvania, is stationed in the Tulsa office of the Survey and E. M. Pilkinton, who came from California, is in the Oklahoma City office.

* * *

Announcement has been received in Tulsa of the coming marriage, June 11, of Miss Bess Spencer, and Douglas Ramsay Semmes, both of San Antonio. Mr. Semmes, a consulting geologist, is past president of the San Antonio Geological Society and has for years been prominent in geological profession.

* * *

Dr. A. F. Melcher, consulting geologist and petroleum engineer, has closed his laboratory in Bradford, Pa., and will devote full time to his Petroleum Engineering Laboratories, in Tulsa.

* * *

Died: In Tulsa, James E. Dale, assistant superintendent of the Barnsdall Oil Co.'s gasoline department. He was 55 years old and had been ill for six months. His widow survives him.

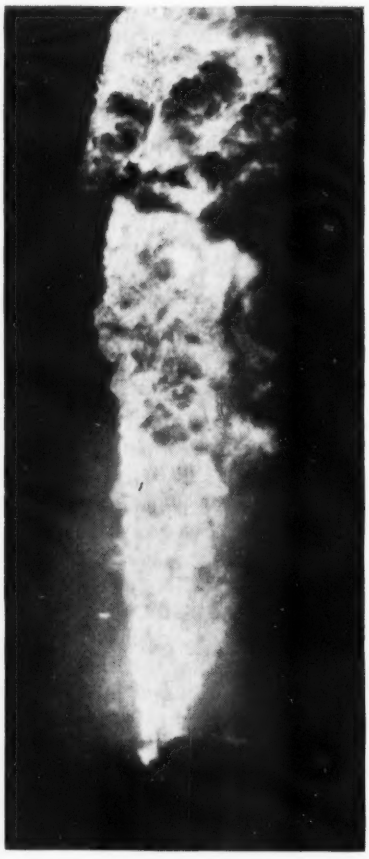
* * *

To be Married: On June 6, R. E. Lege, chemist for the White Oak Refining Co., Oklahoma City, and Miss Kathleen Madeley, of Galveston.

* * *

Tulsa, May 30.—White Eagle Oil Corp. will lay an eight-inch oil pipeline from its Augusta, Kans., refinery to the Ritz-Canton field of eastern McPherson county, slightly more than 50 miles. This is the second new pipeline proposed for the area, the other being a joint venture of the Derby Oil & Refining Corp. and the Lario Petroleum Co., affiliated with Globe Oil & Refining Co. There is a developed potential production in this field of nearly 60,000 barrels, about 10 per cent of which is being produced.

The Spectre of the Flaming Well!



This fantastic shape, resembling a gigantic face was caught by the camera while the Sinclair Oil & Gas Co.'s well, near Gladewater, Tex., was on fire. The flames cost the lives of nine men

20,000
BARRELS PER DAY

ALCO has designed and is now constructing two 2-stage atmospheric and vacuum distilling units, each with a capacity of 10,000 barrels a day and embodying the most advanced principles of modern refinery practice.

These plants process a superior grade of crude oil for the manufacture of gasoline, naphtha, kerosene, gas oil, lubricating oils, and asphalt.

Alco provides a world-wide service—vast manufacturing facilities and undivided responsibility.

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ALCO PRODUCTS

California Operators Agree to 10 Per Cent Cut in June Crude Production

By Jack N. Westsmith

N. P. N. STAFF WRITER

LOS ANGELES, May 29 AGREEMENT of California operators to an additional cut in the state's daily allowable crude oil production marked the most important happening on the western front during the past week. The new schedules of proration, effective June 1, are predicated on a total allowable daily output of 487,500 barrels per day for the state, with the understanding that the Kettleman Hills field shall not produce in excess of 60,000 barrels per day during the remainder of the current year.

An accompanying table gives the scheduled production allotments for California fields under the new curtailment agreement, exclusive of Kettleman Hills. Figures in the column of "proposed allotments" were developed by the oil operators' general committee from data furnished by the economic and fact finding committees following an extensive study of the curtailment problem.

New allotments for the fixed fields represent an average reduction of 10 per cent from the current allotments except in those fields marked (*) where additional curtailment was considered practicable or in other cases where conditions peculiar to the area make additional curtailment extremely difficult or impossible. The average curtailment of these fixed fields is 58.25 per cent.

Allotments for the variable fields represents a proration average of 57.45 per cent of the approved May potential of 523,000 barrels, to give an allotment of 222,500 barrels per day from fields in this group. The 15 fields classed as "variable" are so designated because of the factors inherent to them that may necessitate a change in the proposed allotments. These factors include the degree of development, curtailment possibilities, character of ownership, or any characteristic that makes the proration control of that field questionable.

Many operators consider this newest conservation move a rather ambitious program in view of the fact that the previous allowable of 500,000 barrels daily was consistently exceeded by 25,000 barrels. Recent completions in Kettleman Hills and Ventura Avenue fields boosted the state's actual daily yield above the 536,000 barrel mark. The state's production would have exceeded 550,000 barrels daily except for a timely decline in the more settled Los Angeles Basin fields of Long Beach, Santa Fe Springs, Seal Beach, and to a less extent, Playa del Rey.

Until such time as California's newest legislative measure, Senate Bill 362, actually

CALIFORNIA PRORATION SCHEDULES

(Effective June 1, 1931)

Fixed Allotment Fields	Approved May Potential	Current Allotment	Proposed Allotment	Difference
Belridge	8,950	4,000	6,500*	+ 2,500
Brea-Olinda	23,670	10,600	9,500	— 1,100
Capitan	1,200	.....	.....	.....
Coalinga	33,510	8,900	8,000	— 900
Dominguez	17,745	11,500	11,500*	.....
East Coyote	3,730	1,600	1,450	— 150
Elwood	98,800	29,000	26,000	— 3,000
Fruitvale	7,830	2,500	2,250	— 250
Inglewood	21,850	16,000	14,400	— 1,600
Kern River	11,500	2,750	2,500	— 250
Lawndale	300	300	300*	.....
Los Angeles	1,500	1,500	1,350	— 150
Lost Hills	6,500	350	2,100*	+ 1,750
McKittrick	4,500	3,600	2,500*	— 1,100
Midway-Maricopa	98,875	55,800	52,500*	— 3,300
Montebello	8,850	7,200	6,500	— 700
Round Mountain	13,000	1,600	1,200*	— 400
Santa Maria	11,975	2,500	2,250	— 250
Summerland	250	250	250*	.....
Ventura Avenue	97,270	44,500	40,000	— 4,500
Ventura-Newhall	5,970	3,900	3,500	— 400
Watsonville	60	60	50	— 10
West Coyote	12,400	8,500	8,500*	.....
Wheeler Ridge	590	590	550	— 40
Whittier	1,425	1,250	1,350*	+ 100
Fixed Field Total	492,250	218,750	205,000	—13,750
Variable Allotment Fields				
Elk Hills	28,760	13,500	12,200	— 1,300
Huntington Beach	42,980	20,500	18,300	— 2,200
Kern Front	18,200	8,800	7,700	— 1,100
Long Beach	179,775	89,350	76,500	—12,850
Mount Poso	20,900	8,500	8,900	+ 400
New Fields	300	.....	100	+ 100
Playa Del Rey	37,875	19,000	16,100	— 2,900
Potrero	1,250	625	550	— 75
Richfield	14,835	7,050	6,300	— 750
Rincon	3,030	1,300	1,300	.....
Rosecrans	7,775	3,700	3,350	— 350
Santa Barbara	525	150	200	+ 50
Santa Fe Springs	129,225	61,850	55,000	— 6,850
Seal Beach	24,970	15,925	10,600	— 5,325
Torrance	12,600	6,000	5,400	— 600
Variable Field Total	523,000	256,250	222,500	—33,750
State Total	1,015,250	475,000	427,500	—47,500

(ex Kettleman Hills).

*More than 10 per cent reduction considered necessary.

becomes operative, the major California companies are expected to continue bearing the brunt of curtailment. In this respect, however, the success of the present proration program lies directly upon the ability of conservation leaders, here, to work out an equitable and acceptable plan of production for the Kettleman Hills field. Such a plan must include oil produced from land controlled by the Kettleman North Dome Association, Standard of California, and, most important of all, the free-lance operators now drilling and producing acreage held in fee.

These latter interests, including several of the largest California companies, will have to be brought into some semblance of order, it is thought, if the western industry is to work toward rehabilitation. Superior Oil Co. and Petroleum Securities Co., each with 160 acres of this uncontrolled fee land and each with two wells capable of producing in excess of 20,000 barrels daily, are at present the worst offenders.

However, there is a total of nearly 1000 acres considered within the productive limits of the north dome that is not controlled by either Standard or the Association. These include such important tracts as Shell Co.'s Dixon lease of 120 acres, Associated Oil Co.'s Whepley lease of 140 acres, North American Consolidated Co.'s 100 acres and the Amerada Petroleum Co.'s 160 acres.

Unrestrained production activity is not expected on any large part of this "outlaw" acreage, but protection of drilling rights, lease obligations, and crude oil requirements may play an important part in loosening the check reins.

Of course, the seriousness of the Kettleman situation is tempered, somewhat, by the fact that pipeline outlets to the field are in the hands of major interests. Efforts are being made to discourage additional drilling on this uncontrolled land by limiting pipeline runs. But this solution is considered temporary at best, with the possibility that, failing to find pipeline outlets, the recalcitrant operators would truck their production from the field.

First Aid Meet

(*Continued from Page* 36)

during the previous month is allowed to post a board bearing such a notice.

As a result of these measures there has not been a lost time accident at the plant since 1929.

For fire prevention there is a daily inspection of fire fighting equipment. Each morning the fire marshal makes sure that all sand buckets, tools, hose and the like are in place. Fire drills are held weekly and foam is actually put through the apparatus every two weeks as a test.

Sherman Brown, reporting for the Warren district, told of joint inspections of various plants by all marshals in the area every two weeks. Meetings are held after each inspection to discuss the plant inspected and make recommendations for the management. Mr. Brown also announced that there had been no fires or accidents at his plant during the past year.

The Conewango Refining Co. at Warren, has published its own fire prevention and safety manual of which each employe has a copy. Roy Gettings, Conewango marshal, was called on to tell of the manual and the fire drill system used at the plant.

This plant is entirely surrounded by a water line. There are 25 company hydrants. The plants are divided into three zones and six sections. When the fire whistle blows each man has a duty to perform, first on his own regular job and then as a fireman, all of which are explained in the manual. The employes of this plant are proud of the fact that they can reach any part of the plant with fire fighting equipment and be hooked up in two minutes. Drills are held at an unannounced time each Friday.

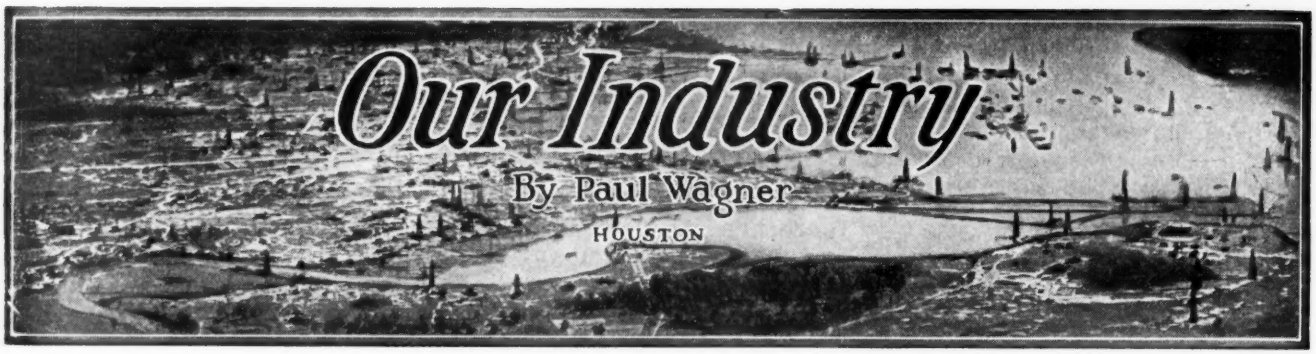
Horace Lohnes of the Washington office of the National Petroleum Association, who is to head up activities of the Fire and Safety Marshals Association

National Petroleum Association executives who were at the meeting and took part in the program included E. M. Lyons of the Tionia Refining Co., N. P. A. president; Richard Wotowitch, of the Cities Service companies, N. P. A. fire and safety department trustee; and Harry R. Lewis, vice-president and manager of the Conewango Refining Co. All assured the fire marshals of support from management and urged continuation of the present activity, saying that in many cases there is doubt whether capital could be found under present conditions, to rebuild a plant destroyed by fire.

President Herbert introduced Horace L. Lohnes, of the N.P.A. Washington office, who has been designated to act as a clearing house for fire and accident reports and to aid members in solving individual problems.

In his annual address Mr. Herbert made a number of suggestions for future work of association members. He suggested recognition buttons for men who have worked without lost time accidents for a year. He suggested a careful investigation of bonding all loading racks to tank cars when loading and grounding railroad sidings to prevent stray currents from entering the plant. He made a plea for prompt furnishing of accident and fire reports, promising that no reports would be issued in connection with the company's name. He pledged the association's aid to any member writing in for advice and cited how such questions have brought prompt help in the past.

The convention and first aid meet were held in delightful surroundings at the Conewango Valley Country Club. The 69 registrations represented 23 companies.



GEORGE D. BOWERS, sales manager of the Simms Oil Co., is president of an inter-organization club formed by Simms employees at Dallas headquarters to further co-operative effort and social activities. Monthly entertainment features are contemplated. Other officers are James Storey, vice president, and Mrs. Mae Hill, secretary-treasurer. Mr. Bowers is widely known in sales circles of the southwest and has served the Texas Petroleum Marketers Association as an officer for several terms. Before joining the Simms organization he was sales manager of the Panhandle Refining Co., Wichita Falls.

* * *

The Will C. Young Refining Co., a 700-barrel crude oil capacity plant built by Will C. Young and associates, has been organized to operate in southern Archer county, Wichita Falls district of North Texas. It will draw its crude supply from nearby leases and products will be marketed under the trade name of "Arco."

* * *

George A. Henshaw, Jr., of San Angelo, who formerly operated as the Henshaw Oil Corp., has joined forces with Carl G. Cromwell, West Texas drilling contractor, in formation of the Apollo Oil Co., at San Angelo. Mr. Henshaw is president; Mr. Cromwell, vice president and general manager; and Sam Goldman, long an associate of Mr. Henshaw, is secretary-treasurer. Vice presidents are S. J. Sackett and Harry C. Kinne, Chicago lawyers.

Mr. Henshaw's career as a wildcatter resulted in discoveries by him in Brown, Howard and Glasscock counties of West Texas, which he sold, respectively, to The Texas Co., Magnolia Petroleum Co., and the American Maracaibo Co. Mr. Cromwell drilled the discovery well of the Big Lake field, Reagan county, and was long connected with the Texon-Group One Companies, now stock-controlled by Continental Oil Co.

Mr. Henshaw is a polo enthusiast and backer of the San Angelo series contests of Mexican army and West Texas teams. Mr. Cromwell among other activities has operated an air line from San Angelo to Fort Worth and Dallas.

* * *

R. H. Hargrove of the United Gas System, Houston, chairman of the Gulf Coast advisory committee of eleven on South Texas proration, has reported progress to the Oil & Gas Division of the railroad commission at Austin in a program to reduce production in the district to 140,000 barrels daily. The committee is seeking cessation of all Gulf Coast drilling, except under mandatory conditions of lease requirements, as a means of making proration effective. Gulf Coastal production, recently averaging 155,000 to 160,000 barrels daily, has been cut from more than 200,000 barrels since proration was begun in August, 1930.

George D. Bowers

* * *

Houston Harte, San Angelo newspaper publisher and leader in activities incidental to Permian salt basin oil development, has been elected president of the West Texas Chamber of Commerce.

* * *

J. F. Hinkle, land commissioner of New Mexico, has laid down a new rule affecting oil leases in his state. Thumb prints will be used as signatures in place of marks of persons unable to sign their names. First use of the thumb print signature in New Mexico was made in the case of an illiterate Indian.

* * *

A. L. Rushing of Roswell, New Mexico, and G. J. Sevier of San Antonio, both scouts for the Pure Oil Co., have been transferred to the production department at Van, East Texas.

* * *

Purchase of the Fort Worth Gas Co., by the Lone Star Gas Co., will result in the last mentioned corporation absorbing the operating personnel of the other, according to announcement of President L. B. Denning of the Lone Star and W. F. Wright, manager of the Fort Worth company. O. K. Shannon, president, and C. K. Fletcher, secretary-treasurer, of the Fort Worth corporation, will become Lone Star executives. Mr. Wright becomes divisional manager of Fort Worth operations.

* * *

H. E. Crum, formerly identified with Skelly Oil Co.'s Panhandle operations, with Amarillo headquarters, is now with the Columbian Carbon Co., at Charleston, West Virginia.

Synthetic Lubricants of Constant Viscosity With Varying Temperature†

By F. W. Sullivan, Jr.,* V. Voorhees,* A. W. Neeley* and R. V. Shankland*

A COMMERCIAL process for the manufacture of synthetic lubricating oils, through the polymerization of olefinic hydrocarbons with aluminum chloride, was announced by technologists of the Standard Oil Co. of Indiana, at the recent meeting of the Petroleum Division of the American Chemical Society, at Indianapolis.

The products of the new process, described in detail in the accompanying article, are described as being well suited for uses where constancy of viscosity with varying temperature or high oxidation stability are required, such as automobile transmissions, steering gears and shock absorbers, and in aircraft engine lubrication.

Cracked distillates from various gas oils were found to be suitable material for polymerization, yielding viscous oils whose properties were more or less paraffinic according to the properties of the charging stock.

The refining of the crude polymerized product is said to be very simple, a factor contributing to the simplicity of the refining process being that the product, though made from wax, is waxfree, hence no dewaxing operation is involved.

The patents covering this process are owned by the Indiana company, having been issued to, or applied for by, Brownlee and assigned to the company. The process is already in commercial use on a limited scale, for the manufacture of special oils for lubricating gear shifts, airplane engines, and automobile shock absorbers.

While no effort as yet has been made to offer licenses under the various patents and their applications to commercial manufacture, officials state that the usual company policy of granting licenses on new developments at reasonable royalty rates will probably be adhered to in this case.

IT IS well known that all commercial hydrocarbon lubricating oils are mixtures of many different kinds of molecules, varying in molecular weight, hydrogen-carbon ratio, and doubtless in the number of rings and degree of branching of the chains. It is highly improbable that any of these accidental mixtures can be so desirable for lubricating purposes as some of the individual components thereof, indeed, it is quite probable that certain hydrocarbons not present in petroleum would be better than any of those occurring naturally. With the possibilities of synthetic chemistry confronting him, the petroleum chemist should no longer be content with what nature happens to provide.

Obviously the most important characteristic of lubricating oils is viscosity, and since most lubricants are used under varying conditions of temperature, it is important that viscosity vary as little as possible with temperature change. The effect of temperature on the viscosity of an oil, or its temperature coefficient of viscosity, is a fundamental property of the hydrocarbons of which it is composed, and only a major change in the composition of the oil will markedly change it in this respect. Dean and Davis (*21*)** have proposed a useful method of indicating the temperature coefficient of viscosity of a commercial lubricant by the "viscosity index," which expresses the relation of its temperature coefficient to those of certain natural oils. The class of natural oils having the lowest coefficient is rated as 100 on this scale and oils with higher coefficients received lower ratings.

Mineral oils having low temperature coefficients of viscosity, low vapor pressures for a given viscosity, and low densities are said to be paraffinic, and those at the other end of the range are said to be naphthenic. These terms will be used throughout this paper. These properties are inseparably related, from which it would be inferred that they are the common result of the presence in the oil of a certain type of hydrocarbon.

Analytical methods have not thrown much light on the constitution of mineral lubricating oils, nor have they indicated the relations between constitution and physical properties. Mabery (*54a*) has found that paraffinic oils have a higher hydrogen-to-carbon ratio than naphthenic oils. In general, it seems that a high hydrogen-to-carbon ratio is a concomitant of desirable paraffinic properties.

Mono-olefins of the empirical composition C_nH_{2n} possess a higher hydrogen-to-carbon ratio than any mineral lubricants. They are readily available and numerous investigators have

†This paper was presented before the Division of Petroleum Chemistry at the meeting of the American Chemical Society, Indianapolis, March 30-April 3, 1931.

*Standard Oil Co. of Indiana.

**A list of all literature cited appears at the end of this article.

shown that they may be readily polymerized by aluminum chloride or other means to viscous oils. The known fact that natural lubricating oils vary in properties and the reasonable belief that such variations are due to differences in chemical constitution, together with the knowledge that olefins can be polymerized to viscous oils and the expectation that relations between constitution and properties should be evident, provided the basis of this work. Investigation of the polymerization products of many typical olefins has shown that the properties of these polymers are very closely related to the constitution of the starting materials. After determining the raw materials which yield the best lubricating oil, it has been possible to develop sources of such materials and to carry through the manufacture of such superior lubricants to its commercial phases in the manner which will be described.

Historical

Although a few earlier instances of polymerization are recorded in the literature, Friedel and Crafts (*31*) appear to have made the first observation of the formation of a synthetic lubricating oil. They found that when small amounts of finely divided aluminum or aluminum chloride were added to amyl chloride a vigorous reaction ensued, with the evolution of hydrogen chloride. Saturated hydrocarbons were formed, the higher boiling of which had the appearance of lubricating oils. Since that time a large amount of work has been done on the subject of polymerization. In general unsaturated hydrocarbons, especially olefins, are best suited for polymerization to higher molecular-weight oils or fuels.

As early as 1879 Balsohn (*6*) reported that ethylene and aluminum chloride reacted to form a liquid which on treatment with water yielded thick, oily products. A year later Gustavson (*37*) reported that ethylene (or alkyl bromides) reacted in a similar manner with aluminum bromide, while only recently Stanley (*80*) and Nash, Stanley, and Bowen (*66*) have published the results of their work on the production of synthetic lubricating oils by catalytic polymerization of ethylene, preferably with aluminum chloride.

Polymerization of other unsaturated hydrocarbons in the presence of aluminum chloride has been reported by numerous investigators. Heusler (*39*) treated unsaturated hydrocarbon distillates with the catalyst; Aschan (*4*) polymerized amylene; Engler and Routala (*24*) polymerized amylene, hexylene, and other olefins; Gangloff and Henderson (*32*), who treated various olefins with aluminum chloride for the purpose of obtaining crystalline double compounds, observed some polymerization; Brownlee (*14*) made lubricating oils of low specific gravity, low cold test, and high viscosity from light petroleum distillate (from a Pennsylvania crude) that contained a considerable percentage of unsaturated hydrocarbons, by agitating with a catalyst such as aluminum chloride (0.1 pound per gallon or less) at a temperature of 300-400° F. for 1 to 1½ hours. The Braunkohlenprodukte, A.-G. (*12*) obtained viscous oils by heating cracked benzines to 130° C. with aluminum chloride. In the Allenet process (*76*) ethylene hydrocarbons were polymerized by passing them into a suspension of aluminum chloride in liquid hydrocarbons.

Oily products can be formed by condensation of unsaturated hydrocarbons with aromatics in the presence of aluminum chloride. Abel (*1*), Adiassewich (*2*), Agfa (*3*), Scholl and coworkers (*75*), Frankforter and Poppe (*28*), Freund (*29*), Steinkopf and Freund (*83*), McAfee (*59*), Weizmann and Legg (*90*), Lilienfeld (*54*), Schleicher and Buttgenbach (*74*), Milligan and Reid (*62*), Berry and Reid (*8*), S. P. Miller (*60*), Miller and Hill (*61*), Wulff (*94*), Szayna (*84*), Boeseken and Adler (*10*), Bodroux (*9*), Jurkiewicz and Kling (*43*), Humphrey (*41*), Pure Oil Company (*70*), and Leamon (*49*) have all published results of work on the use of aluminum chloride for such condensations or for polymerizations. The I. G. Farbenindustrie, A. G. (*42*), polymerized olefins and condensed olefins with other hydrocarbons to form heavier oils, using a large number of different catalysts under various conditions.

THE use of boron fluoride for the polymerization of olefins has been described by Butlerow and Gorjainow (*15*), Landolph (*48*), Gasselin (*33*), Otto (*69*), Nash, Stanley, and Bowen (*66*), and the I. G. Farbenindustrie (*42*).

Other metal halides can be used in place of aluminum chloride. Besides the I. G. Farbenindustrie patents mentioned above, the Chemische Fabrik auf Aktien (*16*), Klever (*44*), Klever Lautenschläger and Göhring (*45*), Marcusson and Böttger (*57*), Mailhe and Blanchet (*55*), Ayres (*5*), Whitby and Katz (*93*), Staudinger and Bruson (*82*), Humphrey (*41*), Spindler (*78*), Dunstan (*22*), Stanley (*80*), Nash, Stanley, and Bowen (*66*), and Leamon (*49*) describe the use of various metal halides as catalysts. Staudinger and co-workers, as well as Meyer and Mark and others, have published a series of papers on polymerization, which, however, are not concerned with the production of petroleum-like compounds. Tiede and Jenisch (*85*), as well as the I. G. Farbenindustrie (*42*) have used finely divided metals as catalysts for the polymerization of ethylene hydrocarbons. Morgan, Ingleson, and Taylor (*64*) have described the use of zinc chromite as polymerizing catalyst.

Sulfuric acid can also be used as catalyst both for polymerization of unsaturated hydrocarbons and for condensation of olefins with aromatics. The use of sulfuric acid for the purpose has been investigated by Bauers (*7*), Butlerow and Gorjainow (*15*), Krämer and Spilker (*46*), Spilker (*77*), Brooks and Humphrey (*13*), Damiens (*19*), Damiens and Lebeau (*20*), Ramage (*71*), S. P. Miller (*60*), Boeseken and Max (*11*), Miller and Hill (*61*), Ormandy and Craven (*68*), Rouxeville and Creuzillet (*73*), Reilly and Nieuwland (*72*), Stanley (*80*), and Guiselin (*35*). Montmollin (*63*) reports the formation of a petroleum-like oil in the prep-

aration of ethylene by the action of phosphoric acid on ethyl alcohol.

The polymerization of olefins in the presence of floridin, Florida earth, or other siliceous material has been described by Gurvich (*36*), Watermann and Perquin (*88*), Watermann and Jamin (*87*), R. Van Winkle (*86*), Humphrey (*41*), Lebedev and Kobliansky (*51*), Lebedev and Vinogradov-Volzynski (*52*), Fischer, Bangert, and Pichler (*26*), Fischer, Peters, and Koch (*27*), and Mailhe and Renaudie (*56*).

Lubricating oils and other higher hydrocarbons have also been prepared from lower hydrocarbons, especially olefins, by subjecting such hydrocarbons to the action of electrical discharges preferably of high tension and high frequency, α- or β-rays, x-rays, or ultra-violet light (*95*).

The polymerization can even be carried out in the absence of catalysts or electrical discharges, by subjecting the hydrocarbons to the action of heat and pressure (*96*).

Fischer (*25*) and Stanley and Nash (*81*)—see also Goudet (*34*) and Wheeler (*91*)—obtained higher hydrocarbons in the thermal decomposition of methane. Norton and Noyes (*67*), Frey and Smith (*30*), Hague and Wheeler (*38*), Wheeler and Wood (*92*), Hugel and Cohn (*40*), Watermann and Tulleners (*89*), and Morgan, Ingleson, and Taylor (*64*) obtained some higher hydrocarbons in the thermal decomposition of olefins. The Compagnie de Bethune (*18*) polymerized olefins by heating under pressure in the presence of metals of the eighth group.

Engler and co-workers (*24*) (and others) obtained liquid hydrocarbons by pressure distillation of fatty acids or their glycerides. The higher boiling fractions of these distillates resembled petroleum lubricating oils.

Finally, lubricating oils have been obtained by hydrogenation of hydrocarbons or oxides of carbon (*97*).

Recently, reviews on the manufacture of lubricating oils, including synthetic oils, have been written by Krauch (*47*), Clark (*17*), Lee (*53*), Nash (*65*), and Stanley (*79*).

Although it can be seen that many investigators have worked on the general subject of polymerization, few have determined the properties of the products which are significant from the modern point of view, especially the temperature viscosity relationship. None of the above-mentioned authors has described the results of a comprehensive investigation which has related properties to chemical constitution or which has disclosed any practicable method of synthesizing oils more paraffinic in nature, or better in general quality, than natural oils. This goal has now been attained.

Table I

Polymerization of Pure Olefins

Olefin	Viscosity of Product* 100° F. (37.8°C.) Sec.	210° F. (98.9°C.) Sec.	Yield of Oil Wt.%	Viscosity Index**	Gravity °A.P.I.	Pour Test °F.	(°C.)
Ethylene	2769	80		—150	18.0		
Propylene	1083	70	33.3	20	33.1	—10	(—23)
Butene-1	1654	92		50	34.3	—10	(—23)
	1122	78	46.4				
Butene-2	1507	81	33.3	21	34.7	—5	(—20)
Isobutylene	3706	147	42.0	67			
	1540	94			32.5	—10	(—23)
	868	73					
Pentene-1	1350	94	59.8	82			
	1180	89			33.2	—15	(—26)
Pentene-2	1946	93	38.5	27	32.8	0	(—18)
	976	68	53.0	0			
3-Methylbutene-1	3301	108	50.8		34.0	5	(—15)
	938	65					
	321	50					
2-Methylbutene-1	1959	89	34.5	11	33.7	5	(—15)
	998	68					
Trimethylethylene	1476	70		—74	31.0	25	(—4)
	367	49	29.3				
(Isoamyl Chloride)	2354	87			24.0		
Hexene-1	1155	92		91	34.3	—25	(—32)
Octene-1	905	88		104	34.8	—20	(—29)
Cetene	1774	201	85	138	33.9	45	(7)
	1187	153			34.8	45	(7)
	717	108			35.9	40	(5)
Cyclohexene	2135	85		—27	18.0	25	(—4)
Turpentine	4750	83		—324	15.8	30	(—4)

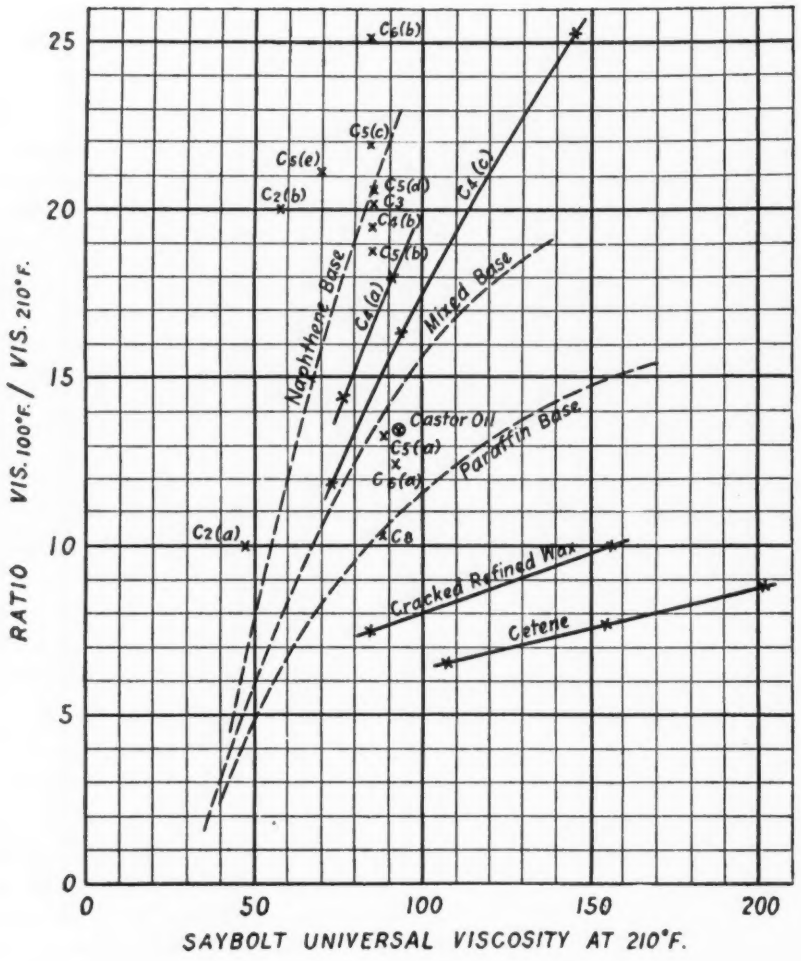
*The viscosity figures in all tables are Saybolt Universal viscosities.
**The viscosity index (see Dean and Davis (*21*) of each oil was calculated for a viscosity of 85 at 210° F.

Polymerization Procedure

In his work on the polymerization of cracked distillates from Pennsylvania gas oil, Brownlee used about 2 per cent by weight of aluminum chloride at 300-400° F. (150-205° C.). Starting with these conditions, it was found that lower temperatures were better from the standpoint of yield of viscous oil, and, in general polymerizations were conducted at temperatures between 70° and 200° F. (21° and 93° C.). Slight variations in polymerizing conditions had but little effect on the quality of the polymerized product. On the other hand, it appeared that the properties of the products of polymerization of different unsaturated materials varied greatly. Accordingly, several normal olefins and isoolefins and typical representatives of cyclic unsaturated hydrocarbons were polymerized.

The apparatus used in many of the experimental runs consisted of a 6-liter cylindrical autoclave placed in a vertical position and provided with an anchor-type agitator, a thermometer well, a pressure gage, and plugs in the top and bottom. Other small-scale experiments were made in 4-gallon (15.1-liter) steel cylinders mounted on trunions like a churn and heated by an internal steam coil. Semi-works experiments were conducted in a 2-barrel jacketed kettle agitated by a centrifugal pump arranged to circulate the reacting mixture from the cone bottom to the top of the kettle. This latter design was followed in principle on the large scale and has proved quite satisfactory.

In order to obviate the possibility of small differences due



Viscosity Characteristics of Synthetic Oils

$C_2(a)$—Ethylene (Nash)	$C_5(b)$—Pentene-2
$C_2(b)$—Ethylene (Nash)	$C_5(c)$—3-Methylbutene-1
C_3—Propylene	$C_5(d)$—2-Methylbutene-1
$C_4(a)$—Butene-1	$C_5(e)$—Trimethylethylene
$C_4(b)$—Butene-2	$C_6(a)$—Hexene-1
$C_4(c)$—Isobutylene	$C_6(b)$—Cyclohexene
$C_5(a)$—Pentene-1	C_8—Octene-1

to variations in polymerizing conditions, a procedure was standardized as closely as possible and is exemplified by the following illustration. A solution of 420 grams of amylene in 3 liters of naphtha, rendered inert by previous aluminum chloride treatment, was agitated with 75 grams of aluminum chloride for 8 hours at 135° F. (57° C.). At the end of this time the product was allowed to settle, sludge was separated, and the supernatant solution of oil, after being washed successively with sodium hydroxide solution and water, was reduced with fire and steam to the desired viscosity. The oil obtained by hydrolysis of the aluminum chloride sludge was inferior in all respects. This fact is confirmed by the results of Stanley (*80*), and Nash, Stanley, and Bowen (*66*), who found that as the temperature of polymerization of ethylene with aluminum chloride was increased the yield and quality of "combined" oil diminished. All the olefins were polymerized in naphtha solution except cetene, which was agitated with aluminum chloride at 135° F. (57.2° C.) in the absence of any diluent. Most of the olefins were made by the dehydration of the corresponding alcohol over alumina. Cetene was made by the thermal decomposition of spermaceti or cetyl alcohol.

Experimental Results

The results of the experiments with pure olefins are given in Table I. In general, it appears from this table that in the case of normal olefins, with increasing molecular weight of the raw material, the temperature coefficient of viscosity decreases. Although the polymerized oil from cetene had a lower temperature coefficient of viscosity than any of the other synthetic oils, it had a high pour test. Investigation showed that this high pour test was not due to the presence of a small amount of high melting wax, but rather that it was a natural characteristic of the entire synthetic product, which evidently had a fairly high melting point. This apparently happens only in the polymerization of olefins containing very long straight chains. In the case of isomeric olefins the change of viscosity with temperature increases with the degree of branching of the starting material. This cannot be expressed quantitatively and there are exceptions, as in the case of normal butylene compared with isobutylene.

The oils obtained by polymerization of the cyclic olefins, cyclohexene and turpentine, possessed to an extreme degree the properties of naphthenic oils and, in fact, showed higher temperature viscosity coefficients than any naturally occurring naphthenic oil. The oils from these cyclic olefins, as well as that from ethylene, possessed low A.P.I. gravities, whereas all the other synthetic oils were characterized by approximately the same high gravity. These results expose in a rather striking manner the fallacy of placing too much reliance on gravity as an indication of the other characteristics of a lubricating oil. Thus it can be seen from the table that two oils of similar viscosity may have the same A. P. I. gravity and yet have decidedly different temperature susceptibility.

It is interesting to note that the Dean and Davis viscosity indices varied from less than —300 in the case of oil from turpentine to 138 in the case of the oil from cetene, while the extreme range for mineral oils is from 0 for naphthenic oils to 100 for paraffinic oils.

The accompanying chart illustrates graphically the variation of viscosity with temperature of a number of synthetic oils in comparison with naturally occurring American oils. The ratio of the Saybolt viscosity at 100° F. (37.8° C.) to that at 210° F.

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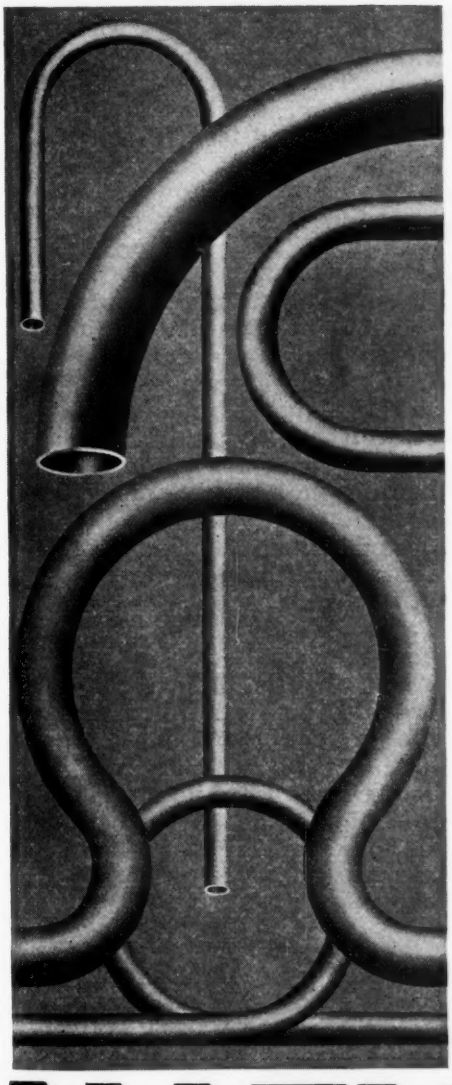

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Table II

Polymerization of Cracked Distillate from Various Stocks

Stock Cracked	Boiling Range of Distillate Polymerized °F.	(°C.)	Viscosity of Product 100° F. (37.8° C.) Sec	210° F. (98.9° C.) Sec.	Viscosity Index	Yield of Oil Wt. %	Pour Test °F.	(°C.)	Gravity °A.P.I.
Winkler gas oil	225-500	(107.2-260)	3650	86	—172	17.9	—15	(—26)	15.4
Shale oil	320-420	(160-215.5)	2430	84	—64	19.6	—15	(—26)	14.5
Wax free midcontinent gas oil	300-500	(149-260)	1500	86	41	50.5	5	(—15)	23.6
Oleic acid	Init.-300	(Init.-149)	1420	87	52	48.0	—10	(—23)	23.4
Pa. mineral seal	300-500	(149-260)	1275	86	63	51.3	—5	(—21)	26.8
Ozokerite	300-500	(149-260)	914	85	97	16.5	—35	(—37)	26.0
70% wax from sweat oil	300-500	(149-260)	835	84	103	50.0	—35	(—37)	30.8
Paraffin wax (122-140° F.)	Init.-428	(Init.-220)	797	85	109	45.0	—10	(—23)	33.1
High melting petroleum wax (172° F.)	300-500	(149-260)	735	87	118	55.0	—35	(—37)	31.3

(98.9° C.) is plotted against the viscosity at 210° F. (98.9° C.). Where more than one point is given for the same type of oil—e. g., synthetic oil from butene-2—it signifies that the oil was reduced to higher viscosity and viscosity determined repeatedly. The interesting fact is brought to light that the points thus determined for a synthetic oil fall on a straight line, whereas the lubricating fractions from natural oils give points which fall on a curve. The significance of this is not fully understood, but it may indicate that the synthetic oils are homogeneous in their chemical composition—i. e., contain the same type of hydrocarbons throughout the distillation range—whereas the natural oils may contain more paraffinic hydrocarbons in the heavy end than in the light end.

The two heaviest distillate oils prepared from ethylene by Nash and his co-workers (*66*) are plotted for comparison. The viscosities were transposed to Saybolt and values are 100° and 210° F. (37.8° and 98.9° C.) obtained from a Herschel diagram. It is seen that these oils are distinctly inferior to natural American oils from the standpoint of viscosity-temperature characteristics, a fact which was recognized by Nash. The value for polymerized ethylene reported in Table I falls on an extension of the line through these points.

For further comparison, the viscosity of castor oil is also plotted, using data taken from the International Critical Tables. It is seen to be somewhat better than mixed-base oils with respect to viscosity-temperature coefficient, although quite inferior to the natural paraffinic oils and the better synthetic oils.

Experiments with the cracked distillates from various charging stocks were then carried out. From the data in Table II it appears that, in the case of gas-oil charging stocks, the more paraffinic the charging stock the better is the temperature coefficient of viscosity of the oil. In the case of wax-bearing stocks, the higher the wax content the better is the quality of the polymerized oil. Since it appeared from the preceding experiments that oils of the best quality resulted from the polymerization of normal olefins of fairly high molecular weight, and that materials closely approximating this nature could be produced by cracking wax-bearing stocks, it remained to determine what wax content was necessary and what the permissible range of boiling points of the cracked distillate might be.

Samples of paraffin wax containing varying amounts of oil were cracked in the vapor phase and the unsaturated distillates were polymerized under uniform conditions. As seen in Table III, it was found that increasing amounts of oil in the wax used as charging stocks were accompanied by a regular increase in the temperature coefficient of viscosity of the resulting polymerized oil. The oil from refined wax possessed a lower temperature coefficient of viscosity, a higher gravity, and a lower pour test than any oil made from known crudes. Also the yields of viscous oil were better when charging stocks containing higher percentages of wax were used. The yields in Table III are comparable, but not the maximum attainable. These results indicate that in order to be suitable for use in the production of a synthetic oil having a viscosity index of 100 or higher, a wax should not contain more than 15 per cent oil.

Table III

Effect of Wax Concentration on Synthetic Oil

Stock	Boiling Range of Distillate Polymerized °F.	(°C.)	Yield of Oil Wt.%	Viscosity of Product 100° F. (37.8°C.) Sec.	210°F. (98.9°C.) Sec.	Viscosity Index*	Gravity °A.P.I.	Pour Test °F.	(°C.)
Wax-free mid-continent gas oil	300-500	(149-260)	50.5	1500	86	41	23.6	5	(—15)
40% wax	300-500	(149-260)	46.5	1030	87	90	28.5		
65% wax	Init.-530	(Init.-277)	42.2	804	77	90	29.4	—15	(—26)
70% wax	300-500	(149-260)	50.0	835	84	103	30.8	—35	(—37)
75% wax	Init.-526	(Init.-274)	44.2	840	83	99	30.9	—15	(—26)
85% wax	Init.-496	(Init.-258)	51.0	780	83	107	31.8	—20	(—29)
95% wax	Init.-590	(Init.-310)	64.1	675	86	123	34.0	—15	(—26)

*In this and subsequent tables each viscosity index was calculated directly from the viscosities given.

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Table IV

Effect of Boiling Range of Cracked Distillate from Refined Paraffin Wax on Synthetic Oil

Distillate Fraction Polymerized °F.	(°C.)	Viscosity of Product 100° F. (37.8°C.) Sec.	210° F. (98.9°C.) Sec.	Viscosity Index	Yield of Oil Wt. %	Gravity °A.P.I.	Pour Test °F.	(°C.)
Init.-200	(Init.93.3)	1083	83	87	52.0	31.5	—20	(—29)
200-310	(93.3-154.5)	926	85	96	52.0	31.3	—20	(—29)
310-420	(154.5-215.5)	637	84	124	69.0	34.4	—35	(—37)
420-510	(215.5-265.5)	1565	157	123	67.5	33.7	—10	(—23)
Init.-428	(Init.-220)	797	85	109	45.0	33.1	—10	(—23)

The yields depend on the nature of the distillate used and the conditions of polymerization. These factors will be considered separately.

Effect of Nature of Distillate Polymerized on Yield and Quality of Viscous Oil

DEGREE OF UNSATURATION—The distillate used in most of the experiments described was about 90 per cent unsaturated. The degree of unsaturation was determined by treatment of the distillate with 90 per cent sulfuric acid followed by a determination of the amount of polymers formed; the percentage by volume of unsaturated hydrocarbons in the original distillate could then be calculated as the sum of the treating loss plus the polymerization loss. The degree of unsaturation of the distillate had a considerable effect on the yield of viscous oil; for example, using a 60 per cent unsaturated distillate, a 20 per cent yield (by volume) of an oil having a viscosity of 200 seconds Saybolt at 210° F. (98.9° C.) was obtained, while polymerization of a 90 per cent unsaturated distillate under the same conditions gave a 35 per cent yield a 200-viscosity oil.

BOILING RANGE OF DISTILLATE—The results of experiments on the effect of the boiling range of the cracked distillate on the polymerized oil (Table IV) confirmed the conclusions deduced from the experiments on pure olefines— namely, that the longer the straight chains in the unsaturated stock polymerized, the lower would be the temperature-viscosity coefficient of the resulting oil. The differences were insufficient, however, to justify the polymerization of anything other than the entire distillate. (With cracked mid-continent distillate the lower fractions yielded the oil of lowest temperature-viscosity coefficient, which would seem to substantiate the assumption that the naphthenes were concentrated in the heavier fractions.) The higher the end point of the distillate polymerized, the lower was the temperature coefficient of viscosity of the polymerized oil. The yield of oil was somewhat lower, however, when a distillate of higher end point was polymerized.

It was found that mixtures of unsaturated hydrocarbons gave a viscous oil whose quality could be predicted from the properties of the oils obtained when the various components were polymerized separately. For example, the oil obtained by polymerizing a mixture of propylene and cracked paraffin wax distillate suffered the same loss in viscosity when heated from 100° to 210° F. (37.8° to 98.9° C.) as a blend of oils made from propylene and from cracked paraffin, respectively. The relative amounts of the two oils in the blend were calculated on the basis of the yields obtainable from the two starting materials to give a blended oil containing the same proportions of propylene oil and cracked paraffin wax oil as the oil obtained by polymerizing the mixture. Moreover, polymerization of a solution of the calculated amount of propylene in a synthetic oil from cracked paraffin wax also gave an oil with the same temperature coefficient of viscosity as the blend just mentioned.

The boiling range of the distillate used may be varied according to the quality and yield of product desired, but a distillate having an end point of about 500° F. (260° C.) is ordinarily used. Polymerization of such a distillate gave a wax-free product and on reduction both the light overhead and the high-viscosity bottom were of low cold test. A distillate cut at

Table V

Effect of Time of Polymerization on Yield of Oil

Stock, cracked distillate from 85% wax; temperature 210° F. (98.9° C.)

Time Hours	Viscosity of Product 100°F. (37.8°C.) Sec.	210°F. (98.9°C.) Sec.	Yield of Oil Wt. %	Gravity °A.P.I.	Pour Test °F.	(°C.)
4	530	70	66.0	31.9	10	(—12)
4	1791	137	36.0	30.8	—20	(—29)
9		83	66.0	32.0	0	(—18)
9		137	43.4			
9	2069	154	39.0	31.0	—20	(—29)
18	623	75	68.5	31.7		
18	2063	152	42.0	30.8	—20	(—29)

Table VI

Effect of Temperature of Polymerization on Yield of Oil

Stock, cracked distillate from 85% wax

Temp. °F.	Time Hours	Viscosity of Oil 100° F. (37.8°C.) Sec.	210° F. (98.9°C.) Sec.	Yield of Oil Wt. %	Gravity °A.P.I.	Pour Test °F.	(°C.)
Room	114	1273	110	51.5	30.5	5	(—15)
Room	114	2776	155	42.5	30.5	—15	(—26)
150	18	1172	106	56.0	31.0	—10	(—23)
150	18	2311	158	41.0	30.3	—20	(—29)
210	18	623	75	68.5	31.7	5	(—15)
210	18	2063	152	42.0	30.8	—20	(—29)
250	18	730	82	65.3	32.0	0	(—18)
250	18	.....	147	42.5		—5	(—21)
300	18	425	63	64.5	33.4	10	(—12)
300	18	1732	138	35.0	30.4	—10	(—23)

550° or 600° F. (288° or 315.5° C.) contained some wax, and gave an oil from which the wax could be distilled on reduction, to give a low pour test bottom, but the overhead oil contained wax and had a high pour test. In the absence of any component, such as wax, which tends to crystallize on cooling, the pour test of an oil is a function of its temperature coefficient of viscosity; the lower the coefficient, the lower the solidification point.

Effect of Polymerizing Conditions on Viscous Oil

As previously mentioned, Brownlee carried out his polymerizations at temperatures between 300° and 400° F. (149° C. and 204.5° C.), using less than 0.1 pound of anhydrous aluminum chloride per gallon, and agitating for 1½ to 2 hours. Investigation revealed numerous improvements over those conditions.

TIME AND TEMPERATURE—The yield of viscous oil was higher, the lower the temperature of polymerization, provided that all the olefins were polymerized. In this connection Lebedev (*50*) and others reported that the lower the temperature of polymerization of unsaturated hydrocarbons, the greater was the increase in viscosity; Engler and Routala (*24*) found that the proportion of naphthenes obtained in the polymerization of amylene with aluminum chloride was less at lower temperatures; Weizmann and Legg (*90*) obtained considerable amounts of naphthenes by polymerization of butylene at relatively high temperatures. As expected, longer periods of agitation were required at the lower temperatures. The temperature finally adopted was 130-135° F. (54.5-57.2° C.), and the agitation with catalyst was continued for 30 hours at "that" temperature. The results are given in Tables V and VI.

AMOUNT OF ALUMINUM CHLORIDE—Although the use of lower temperatures ordinarily necessitated longer periods of agitation, the time could be shortened by the use of larger amounts of aluminum chloride. The effect of varying the proportion of catalyst is shown in Table VII. Although the use of more aluminum chloride shortened the time of polymerization, or increased the yield in a given time, the amount of sludge was thereby increased, which meant a decrease in ultimate yield of available viscous oil and an increase in cost of operation. It was found desirable to use about 3 per cent of aluminum chloride by weight.

Table VII

Effect of Aluminum Chloride Concentration on Yield of Oil

Stock, cracked distillate from 85% wax

$AlCl_3$ Charge %	Polymerizing Time Hours	Temp. °F.	Viscosity of Oil (37.8°C.) Sec.	(98.9°C.) Sec.	Yield of Oil Wt. %	Gravity °A.P.I.	Pour Test °F.	(°C.)
1.7	18	175-200	775	83	48.5	30.3	—10	(—23)
3.4	18	175-200	730	82	65.3	32.0	—15	(—26)
5.1	18	175-200	765	85	60.0	31.9	—10	(—23)
	a.(79.5-93.4° C.)							

After polymerization and separation of the sludge, the oil was washed with sodium hydroxide solution and then with water, reduced to the desired viscosity with fire and steam, and finally filtered through clay.

Other polymerizing agents were tested for the production of viscous oil. Among the catalysts used were silicon tetrachloride, titanium tetrachloride, stannichloride, phosphorus pentachloride, bismuth trichloride, ferric chloride, mixtures of ferric chloride and aluminum chloride, boron fluoride, and Attapulgus clay activated with hydrochloric acid. None of these substances was equal to aluminum chloride as a polymerizing agent under the conditions of temperature and pressure which were investigated. Boron fluoride accomplished considerable polymerization, but was distinctly inferior to aluminum chloride under the conditions used. Ferric chloride also accomplished some polymerization. Mixing with ferric chloride did not increase the activity of aluminum chloride, the effect of the mixture being about the average of the effects of the two constituents.

Properties of Synthetic Oils from Wax

PHYSICAL PROPERTIES—Some of the physical properties of synthetic oils have been mentioned before. The following conventional inspection data summarize the properties of two principal synthetic oils which are commercially available. The high flash point, A. P. I. gravity, low change of viscosity with temperature, and excellent color are outstanding.

	Oil A	Oil B
Gravity, °A.P.I.	30.6	29.7
Flash, °F. (°C.)	515(268)	615(324)
Pour, °F. (°C.)	—20(—28.9)	0(—17.8)
Viscosity, Saybolt Universal		
100° F. (37.8° C.), seconds	850	3250
210° F. (98.9° C.), seconds	85	197
Color, N.P.A.	2	2½
Conradson carbon, %	0.13	0.4
Sligh oxidation, mg. sludge per 10 grams of oil	1.8	2.8

Since no wax is produced in the polymerization, these synthetic oils are waxfree and consequently their pour tests are in direct proportion to their viscosity-temperature coefficient. As these are low, the pour tests are also low.

CHEMICAL PROPERTIES—When heated to 100° F. (37.8° C.) with 93 per cent sulfuric acid, the synthetic oils darken and slowly evolve sulfur dioxide. At 200° F. (93.3° C.) the evolution of sulfur dioxide is quite rapid. Bromine is decolorized by the synthetic oils and large quantities of hydrogen bromide are formed, indicating the presence of reactive hydrogen.

When heated to 250° F. (121.2° C.) in an open dish in an oven, the synthetic oil held its color much better than finished lubricating oils of the same viscosity.

In general, the oxidation stability of the synthetic lubricating oils is equal, if not superior, to that of highly refined natural

lubricants. Any oxidation which does occur in the case of these oils results in the formation of organic acid rather than sludge, and tests have shown the acid formation to be the same order of magnitude as with naturally occurring oil. Thevalues for the Sligh oxidation test and Conradson carbon previously given in the inspection data are indicative of chemical stability.

PRACTICAL TESTS—A synthetic oil of 157 viscosity at 210° F. (98.9° C.) was tested on a standard steering gear in comparison with a typical black i. e. oil gear lubricant of the same viscosity at 210° F. (98.9° C.). The synthetic oil required a torque of 0.5 pounds at the circumference of a 17-inch wheel at 0° F. (—17.8° C.), while the black oil required a torque of 5 pounds. At —20° F. (—28.9° C.) the torques for the synthetic oil and black oil were 1.2 and 120 pounds, respectively.

In a typical transmission the shifting effort at —20° F. (—28.9° C.) with a synthetic oil was 3 pounds. With a standard transmission lubricant of like viscosity at normal temperature, the shifting effort was 15 to 20 pounds.

After 50 hours service in the crankcase of a Knight motor, followed by filtration from suspended matter, the color of a synthetic oil of 85 viscosity at 210° F. (98.9° C.) had increased from 5.6 true color units (*72a*) to 101. Under the same conditions a midcontinent lubricating oil of the same viscosity increased in color from 163 to 762 on the true color scale. Owing to lower temperature coefficient of viscosity oil consumption was less with synthetic oil.

These oils have been given exhaustive tests in internal-combustion engines, and the results will be reported at a later date.

Discussion of Results

It has been shown that there is a close relation between chemical structure and the temperature coefficient of viscosity of lubricating oils. The polymers of the normal olefins from ethylene to cetene show that as the length of the straight chains increases the change of viscosity with temperature decreases. The polymers of the isomeric butylenes and amylenes show that, generally, the more highly branched the starting material the higher is the temperature coefficient of viscosity of the polymerized oil. In the polymerization of mono-olefins in the absence of dehydrogenation, the empirical formula would be C_nH_{2n}, in which case there can be no more than one ring per molecule. This would be of negligible effect in determining the physical properties of a hydrocarbon of 50 or more carbon atoms. In the case of the highest olefin investigated, cetene, the polymers contained wax-like solids.

These facts would lead one to expect that the normal paraffins would possess the lowest temperature coefficients. This is indeed so, as has been demonstrated by dilution of synthetic oil with low-melting wax. A polymerized distillate was reduced to a viscosity of 82 at 210° F. (98.9° C.) and was found to have a viscosity of 797 at 100° F. The same oil was further reduced to 197 viscosity at 210° F. and mixed with 108° F. melting point paraffin wax. A mixture of 74.7 per cent of oil and 25.3 per cent of wax had a viscosity of 82 at 210° F. This mixture had a viscosity of 604 at 100 as compared with the previous value of 797. Although the viscosity of paraffin is so low that direct comparison with oils of high viscosity is difficult, a comparison has been made with a synthetic oil of low viscosity made from paraffin. This oil had a kinematic viscosity (centipoises) of 8.09 at 130° F. (54.4° C.) and 3.29 at 210° F. (98.9° C.), while the viscosity of wax (melting point 126° F. or 52.2° C.) was found to be 7.61 and 3.42 at the same temperatures.

Viscosity in liquids appears to be a function of two factors, the molecular weight and the intramolecular forces described as association or cohesion. Viscosity resulting from the latter effect might be expected to be more susceptible to change with changing temperature. This might be considered the reason why paraffin oils, which possess the lowest viscosity for a given molecular weight and in which viscosity due to association or cohesion is at a minimum, possess low temperature coefficients of viscosity. Macleod (*54*) has argued in favor of association as the cause of abnormal viscosity in alcohols and acids. His data indicate no regular relations between the viscosity and constitution of hydrocarbons. The known fact that naphthenic oils which possess high viscosity for a given molecular weight also have high temperature coefficients of viscosity should also be cited. Nash (*66*) mentions oils made by the polymerization of ethylene which, although possessing the same molecular weight, are very different in viscosity and in temperature susceptibility. Similar data on natural oils have been published by Mabery (*54a*).

The relation between constitution and viscosity indicated by this work seems to be more consistent than that which has previously been observed in the simpler hydrocarbons. Apparently oils of more highly branched or cyclic structure have more "cohesive" viscosity and greater temperature susceptibility. Further investigation along this line may lead to a clearer understanding of the factors involved in the property of viscosity.

THE pronounced superiority of the polymers of the higher normal olefins to any mineral oils led to a search for an abundant source of such material. It was found that cracked distillates from various gas oils could be polymerized to yield viscous oils whose properties were more or less paraffinic, according to the properties of the charging stock. In the case of wax-bearing charging stocks, the polymerized oils from the cracked distillates were paraffinic to a degree corresponding to the wax content of the charging stock and the polymers of the higher fractions were superior to those of lower boiling cuts.

These findings confirmed the deductions from the investigation of pure compounds. With a sufficient supply of raw material and the possibility of producing an outstandingly superior product, the manufacturing phases of the development were

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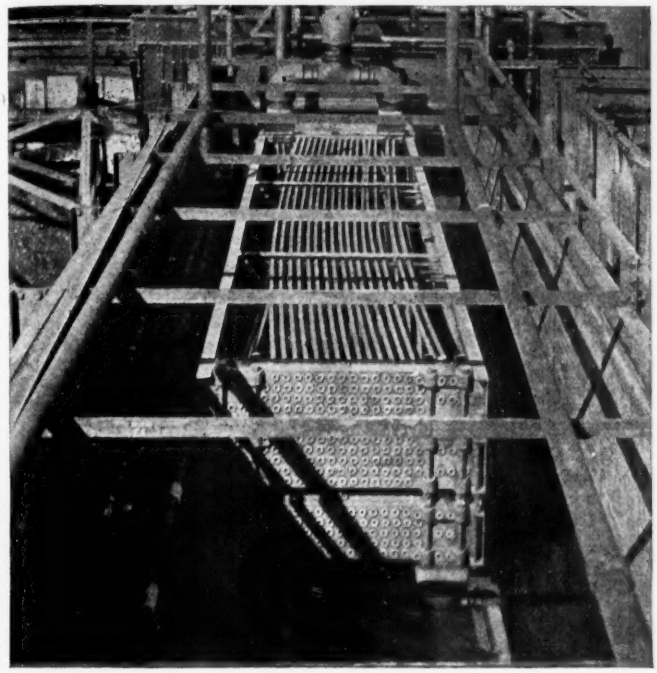

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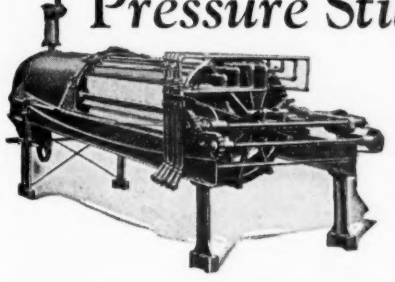

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carried through. The refining of the crude polymerized product is very simple. An outstanding factor contributing to the simplicity of the refining process is the fact that, although made from wax, the product is waxfree and hence no dewaxing operation is involved. Natural paraffinic lubricating oil fractions contain wax whose satisfactory removal is accomplished with difficulty. In the present instance this constituent, often only an undesirable by-product, is converted to an oil more paraffinic than the distillate from which the wax was removed, yet entirely free from solid waxes.

While the major emphasis has been placed on the production of products superior to those occurring in nature, the field extending in the other direction has not been overlooked. The polymers of cyclohexene, and particularly turpentine, are more susceptible to change in viscosity with temperature than any natural oils. This is also true of the polymers of cracked distillates from naphthenic charging stocks. In general, the products obtained by the polymerization of cracked distillates from a given crude oil possess considerably poorer temperature coefficients than the viscous fractions of these same crudes. Furthermore, if polymerized oils are cracked and repolymerized, the repolymerized oils become successively worse.

Comparison of the properties of synthetic oils with those of natural lubricating oils results in certain justifiable deductions. Natural naphthenic oils of low A. P. I. gravity and poor temperature coefficient of viscosity resemble the polymers of cyclohexene and turpentine. It therefore follows that such oils are probably polynapthenes with most of the carbon atoms in or attached to the rings. Natural paraffinic oils are of lower A. P. I. gravity for a given viscosity than the synthetic oils described. Consequently such oils are probably polynaphthenes in which there are relatively few rings but in which long normal chains are prominent in the structure. These deductions are supported by consideration of the properties of the cracked distillates from such oils and of the properties of the polymers of these distillates. It is improbable that any naturally occurring lubricants are highly branched acyclic compounds.

It has been stated that the unique properties of these synthetic oils render them especially adapted to the lubrication of mechanisms which are subject to changes in temperature, notably automobile transmissions, steering gears, and shock absorbers. When such service is encountered together with severe oxidation conditions as in air craft engines, the combination of constancy of viscosity and resistance to sludge-forming oxidation exhibited by these synthetic oils makes them particularly well suited. The involved manufacturing process naturally entails a high cost; yet notwithstanding this, many special problems of lubrication are encountered where such oils provide a satisfactory solution.

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Natural Gasoline

New developments in the natural gasoline industry are reflected quickly in the news pages of National Petroleum News.

In addition to articles on new uses of the product and the economics of the industry, this publication presents many practical plant operating articles and special technical papers.

Others tell of current trends in plant building and equipment and of the wider utilization of the industry's products.

Here are 42 articles published in National Petroleum News on natural gasoline in the past 12 months:

1931

Natural gasoline manufacturers turn to lower vapor pressure grades May 6, p. 41

Method for treating light gasolines April 8, p. 32-F

Rectifier, pressure, temperature control govern quality of gasoline April 8, p. 32-A

Plant operators study economy: plant operation, boiler economies, new specifications, operation of fractionation towers, handling of plant materials and records April 8, p. 30

New specifications cause check-up of plants April 1, p. 73

Application of new specifications March 11, p. 35

Gravity and per cent evaporated at 140° F. related Jan. 28, p. 31

1930

Boiler embrittlement, pump care, discussed at California meeting Dec. 31, p. 45

New specifications based on vapor pressure and volatility Dec. 24, p. 27

Trend in design and equipment of modern plant Dec. 17, p. 67

Cracked, natural gasolines cutting crude demand Dec. 17, p. 44

California natural gasoline situation Dec. 10, p. 55

Largest plant handles 100 m.c.ft. gas per day Nov. 12, p. 83

Blending natural gasoline to volatility specifications Nov. 12, p. 107

To build 12 butane-air plants, Utilities G. & E. Nov. 5, p. 48

Shellane sold by Shell in rolling kitchens Oct. 29, p. 122

Tax on raw natural gasoline sought in Texas Sept. 10, p. 79

Two natural gasoline plants in Hobbs by Oct. 1 Sept. 10, p. 56

Outlet separators save absorption oil at Oklahoma City Sept. 3, p. 75

Natural gasoline markets recovering from slump Aug. 6, p. 25

Storage and handling of natural gasoline at refineries Aug. 6, p. 51

Scotch marine boilers used in gasoline plant July 23, p. 67

Liquefied hydrocarbons, properties of, as affecting their usage July 23, p. 73

Standard contract form adopted for casing-head July 16, p. 41

Absorption plant extracts 95% butane from gas July 16, p. 76

Tentative standard for natural gasoline vapor pressure July 9, p. 65

Liquefied petroleum gas producers and distributors, list of July 9, p. 72

Liquefied gas sales grow 120% June 25, p. 40

Standard of California plans for small town liquefied gas plants June 25, p. 86

Skelly gets gas franchises in Iowa June 25, p. 88

Blending value of natural gasoline June 4, p. 67

Operating results of butane-air gas plant June 4, p. 81

New markets for propane-butane, liquid gases May 28, p. 27

Motor fuel properties of natural gasoline May 28, p. 45

Natural gasoline specifications from refiners' viewpoint May 28, p. 47

Relation of distillation curve to motor fuel performance May 28, p. 49

Stabilized naturals have greater outlet; more storage needed May 28, p. 88

Industry in equilibrium despite 28% output increase May 21, p. 37

Blending charts show properties of finished motor fuel May 21, p. 40

Theoretical analysis of absorption process May 21, p. 43

Liquified natural gas industry to grow rapidly May 21, p. 50

Natural gasoline plant valuation, gas leases and contracts May 7, p. 73

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United States imported 25,300,000 barrels of crude from Venezuela in 1930, or 9,130,000 barrels less than in 1929. Imports in 1928 were 22,-000,000 barrels.

Imports of gasoline and naphtha by the United States in 1930 totaled 17,000,000 barrels, compared with 9,000,000 barrels in 1929 and 4,200,-000 barrels in 1928.

The largest consumer of United States petrolatums, the United Kingdom, took 3,010,000 pounds in 1930, compared with 2,010,000 pounds in 1929, and 1,721,000 pounds in 1928.

ON THE LAZY BENCH

About The Way It Goes

A man was stranded on an unknown island. He was afraid of cannibals, so he moved very cautiously. As he was climbing up a small hill he heard a voice: "Who in hell trumped my ace?" The man lifted his eye to the sky above and said: "Thank Heaven, there are Christians on this island."

* * *

First Chorine—Did you tell anybody of your secret marriage?

Second Ditto—No, I'm waiting for my husband to sober up—I want him to be the first to know.

* * *

"I think she's as pretty as she can be."

"Most girls are."

* * *

A postage stamp in the Aztec language is "amatlozuilolitquiticatlaxlahuila." When with the Aztecs, don't write—telegraph.

* * *

Wife—But how is it that you are home so early from the theatre?

Yokel (returning from first visit to theatre)—I came out after the first act.

Wife—Why did you do that? Didn't you like it?

Yokel—Yes, it was lovely, but I couldn't wait. The program said there was an interval of two years between the first and second acts.

* * *

The man who hides behind a woman's skirt now-a-days is not a coward. No, sir, he's a magician.

—Union Oil Bulletin
Union Oil Co. of California

* * *

"Oh, Mr. Pot, perhaps you can tell me—what does it cost to divorce one husband and marry another?"

"I'm sorry—I don't know the present rate of exchange."

—Magnolia Oil News
Magnolia Petroleum Co.

A man touring Europe sent back a picture postcard bear this message:

"Dear Son:

"On the other side you will see a picture of the rock from which the Spartons used to throw their defective children. Wish you were here.

"Your Dad."

* * *

These two classified ads from a Huntsville (Ala.) newspaper tell their own story without further explanation or comment:

"Notice: From this date, I will not be responsible for any debts or obligations made by my wife.—G. A. F."

"Notice: I have not purchased anything for cash or credit since I became Mrs. G. A. F.—Mrs. G. A. F."

* * *

Reader, Know Any Others

A Scotsman crossing the ocean proved to be a bad sailor and asked the captain a cure for seasickness.

"Have you got a dime?" asked the captain.

"Yes," replied the Scot.

"Well, hold it between your teeth during the trip," the captain advised.

* * *

Let Us Pray

In a recent directory of professions and trades published in Berlin, Germany, it is noted that a total of 991 males style themselves as "professional gigolos."

"Seven towns, I believe, claimed Homer."

"Some of our citizens are wanted by more than that."

* * *

Daughter: "Mother, do you want me to put the parrot on the back porch?"

Mother: "Positively no! Your father is repairing the car in the back yard."

—The Oil Can Illinois Petroleum Marketers Association

* * *

A friend of ours who used to drive an Austin got the hiccoughs one night and broke the rear axle.

a good FENCE lessens

OIL public liability

KIDS are kids in the city; in the oil field or in the factory town they are just the same . . . explorers who take their lives in their hands . . . an unfenced property, a forgotten ladder, a high tank . . . and you have the basis of a damage suit. Protect your tank farm and refinery grounds with a Wickwire Spencer Chain Link Fence. Its *copper bearing steel* of both frame and fabric makes it a permanent structure. A local representative will gladly tell you how inexpensive is the material only or a completely erected fence.

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Pacific Coast Headquarters: San Francisco; *Branches and Warehouses:* Los Angeles, Portland, Seattle
Distributors and Erectors in all principal cities

This triangular name plate appears on all genuine Wickwire Spencer Fences

WICKWIRE SPENCER
Chain LINK *fence*

Please send me without obligation on my part your latest fence catalog.

Name.....

Address.....

City and State.....

Four Report Forms Are Standardized By Natural Gasoline Assoc.

TULSA, May 28

THE accompanying report forms in use by natural gasoline companies have been standardized by the Standard Forms Committee of the Natural Gasoline Association of America, and were reported for adoption by that committee at the association's meeting in Tulsa, May 19 to 21, 1931.

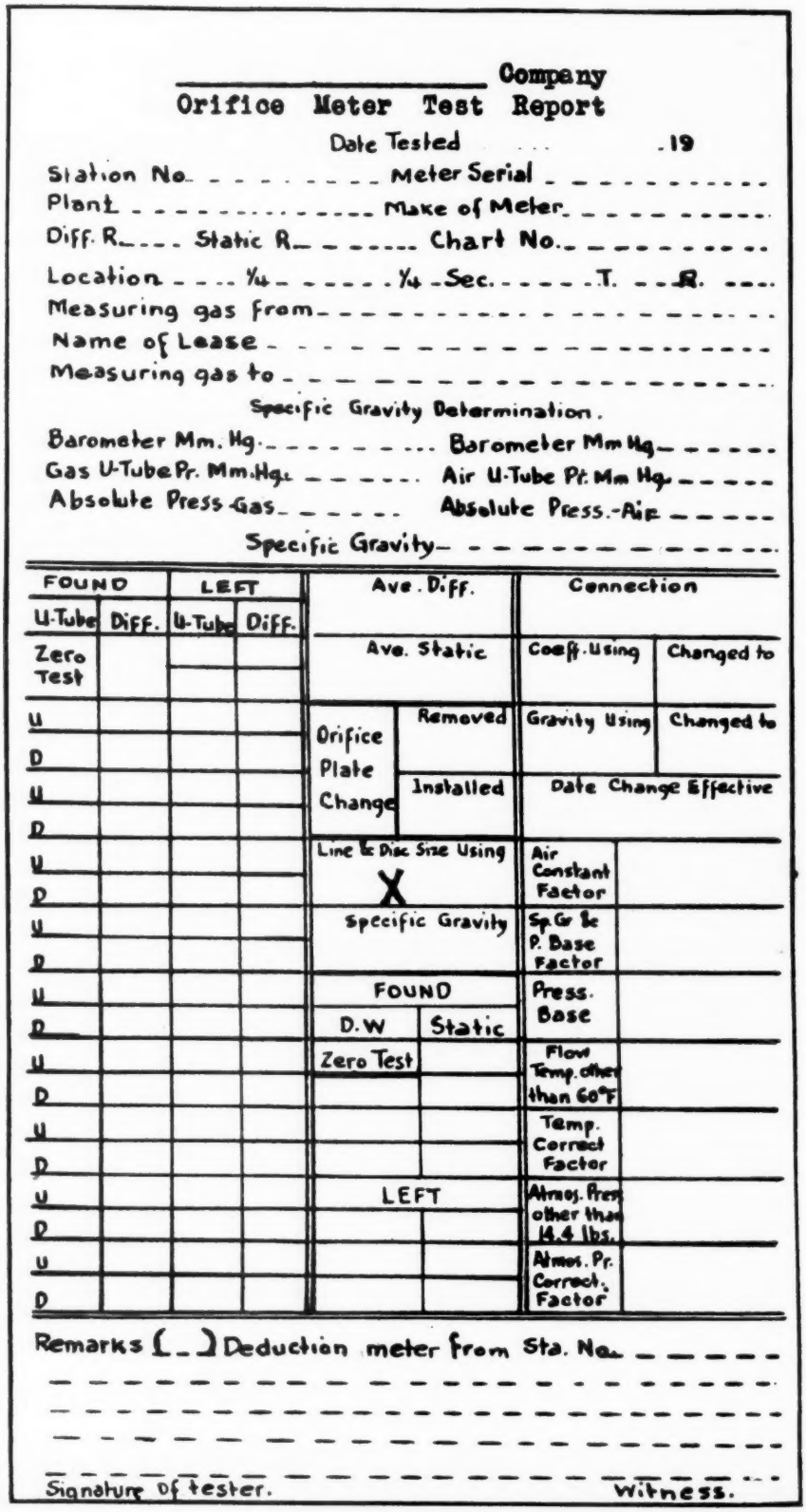
The forms standardized are: Orifice Meter Test Report, Charcoal Test Report, Physical Test Report, Fuel Gas, Electricity, or Water Ticket. They are four of the six forms originally taken up for study by the committee.

On account of the work being done by the Purchasing Agents' Association on the standard invoice form, work on this was suspended by the committee so as not to conflict or interfere with the work of that body.

The standard distillation report form was also under consideration but on account of the many changes necessary because of the adoption of the new specifications and grading system for natural gasoline, the committee decided to forego further discussion until the use of the new grading system has become universal. Recommendation was also made that no further changes in, or standardization of, the bill of lading form be made.

At the beginning of its deliberations, the committee decided to give attention only to those forms used in exchange by the different companies in their transaction of routine business, considering that attempts to standardize company forms used by the individual companies for their own purposes only would be presumptuous.

The members of the committee are as follows: L. H. Sexton, Phillips Petroleum Co.; J. W. Cowles, Shell Petroleum Co.; G. L. Pitcher, The Texas Co.; B. J. Yaseck, Empire Oil and Refining Co.



_____ Company

Orifice Meter Test Report

Date Tested ... .19

Station No. _____ Meter Serial _____

Plant _____ Make of Meter _____

Diff. R. ____ Static R. _____ Chart No. _____

Location ____ ¼ _____ ¼ Sec. _____ T. ____ R. ____

Measuring gas from _____

Name of Lease _____

Measuring gas to _____

Specific Gravity Determination.

Barometer Mm. Hg. _____ Barometer Mm Hg _____

Gas U-Tube Pr. Mm. Hg. _____ Air U-Tube Pr. Mm Hg. _____

Absolute Press. Gas _____ Absolute Press.-Air _____

Specific Gravity _____

FOUND		LEFT		Ave. Diff.		Connection	
U-Tube	Diff.	U-Tube	Diff.				
Zero Test				Ave. Static		Coeff. Using	Changed to
U				Orifice Plate Change	Removed	Gravity Using	Changed to
D							
U					Installed	Date Change Effective	
D							
U				Line & Disc Size Using X		Air Constant Factor	
D							
U				Specific Gravity		Sp. Gr. & P. Base Factor	
D							
U				FOUND		Press. Base	
D				D.W	Static		
U				Zero Test		Flow Temp. other than 60°F	
D							
U						Temp. Correct Factor	
D							
U				LEFT		Atmos. Pres. other than 14.4 lbs.	
D							
U						Atmos. Pr. Correct. Factor	
D							

Remarks (_) Deduction meter from Sta. No. _____

Signature of tester. Witness.

Standard form for orifice meter test report

NAME OF COMPANY

Charcoal Test Report

Date Time _____ Station Meter No. _____

Company Selling _____

Gas From _____ ¼; S.____ T.____ R.____

Lease _____

Plant Name _____ Sp.Grav._____

	1	2	3	Avg
ABSORPTION				
Time Started				
Time Finished				
Meter Finished				
Meter Started				
Gas Run Cu. Ft.				
Gas Temperature F.				
Meter Factor				
Corr. Gas Vol. Cu. Ft.				
Charcoal Used cc.				
DISTILLATION				
Time Started				
Time Finished				
Gross Recovery cc.				
Temp. F.				
Gravity Condensate				
Corr. Factor Condensate				
Net Recovery cc.				
Net Recovery GPM				

Purpose of Test: Settlement ( ) Survey ( )

Remarks:

Standard form for charcoal test report

NAME OF COMPANY

Physical Test Report

Date Time _____ Station Meter No. _____

Company Selling _____

Gas From _____ ¼; S.____ T.____ R.____

Lease _____

Plant Name _____ Sp.Grav._____

	1	2	3	Avg
Gas Line Vac-Pres.				
Atmospheric Temp. F.				
Temperature of Gas F.				
Cu.Ft.Gas Actually Run				
Cu.Ft.Gas at oz.Pres.60 F.				
% Air in Gas				
Temp. of Cooling Water F.				
Pressure on Accumulator Tank				
Gross Recovery cc.				
Temperature Naw F.				
Net Recovery cc.				
Gross Recovery GPM				
Net Recovery GPM				

Purpose of Test: Settlement( ) Survey ( )

Remarks:

Standard form for physical test report

Form (Standard - N.G.A.)

_____ COMPANY No. _____

Fuel Gas, Electricity or Water Ticket

SOLD TO _____ MONTH OF _____ 193 ___

ADDRESS _____

Their well No. or Lease Unit _____ Lease _____

LOCATION: Sec. _____ Twp. _____ Rge. _____ Survey _____ County _____

Show Number of Hrs. under Dates	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Rate	Amount
No. Boilers ___ HP ___ Used For																																		
No. Boilers ___ HP ___ Used For																																		
No. Boilers ___ HP ___ Used For																																		
No. Boilers ___ HP ___ Used For																																		
Gas Eng. HP																																		
No. Houses																																		
No. Stoves																																		
Gasoline Plants																																		
Miscl.																																		
METER READINGS: Previous Reading										Present Reading										Used						K.W.H. or Cu. Ft.								

SERVICE

This Ticket Covers Delivery of (Check)

Gas

Water

Electricity

REMARKS: _____

CREDIT

Gas System _____

Water " _____

Lease _____

Plant _____

APPROVED

_____ Timekeeper

_____ Superintendent

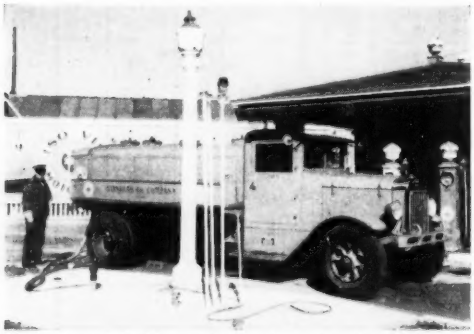
_____ Purchaser

Standard form for fuel gas, electricity or water ticket

The Phillips Petroleum Co., operates a large fleet of International Trucks. This is a new International Speed Truck in service at Amarillo, Texas.

This International Speed Truck with trailer installation is one of several Internationals that carry the products of the Cities Service Oil Co.

The Sun Oil Company uses fleets of Internationals to distribute its products in Canada.



This good-looking International Heavy-Duty Truck works for the Standard Oil Co. of Indiana, which operates Internationals throughout the middle west.

Be Guided by the Experience of International Owners

OUTSTANDING performance, economy of operation, and long truck-life have made hundreds of friends for International Trucks in the oil business. These sturdy trucks are in the hardest kind of hauling service where their power and stamina are severely tested every day under all kinds of conditions.

Many International owners have tried various makes of trucks in their time. They are keen buyers of transportation and judges of motor-truck values. They know their hauling problems and they know that Internationals are built right to give them the most value for their truck dollars.

International owners have proved that these are reliable trucks, ready for any kind of work, and backed up by a strong Company-owned truck service organization that protects Internationals on the job. Whey you buy trucks be guided by the experience of International owners who know how to measure true truck value.

Ask the nearest of 183 Company-owned branches in the United States and Canada for a demonstration. There is an International for every requirement in capacities from ¾-ton to 5 tons. Write us for information.

INTERNATIONAL HARVESTER COMPANY
OF AMERICA
606 So. Michigan Ave. *(Incorporated)* Chicago, Illinois

INTERNATIONAL TRUCKS

Finance Plan Enables Jobber to Increase Sales 15 Per Cent in 1930

By Allen S. James

N. P. N. STAFF WRITER

WICHITA, May 16

THE Farmers Finance Co., organized a little more than two years ago by Rex Kent, president of the Kent Oil Co., Salina, Kan., has been credited by that company's officials with two outstanding accomplishments in the adverse business year of 1930.

In the words of Mr. Kent and G. P. Nissen, vice president of the oil company, the finance plan "was our financial salvation," and "it enabled our company to show a 15 per cent increase in business over that of 1929."

In brief the plan is as follows: The Kent Oil Co. contracts with farms to supply their needs of petroleum products and takes a note for the estimated amount which will be required before harvest plus a small handling charge. The note is secured by a mortgage on the crop or chattels and is placed with the finance company which passes on the mortgage and collects when the crops are harvested.

When deliveries are made under the contract the farmer draws a draft on the finance company for the amount of the delivery. He is then given a cash sales ticket which allows him to apply for gasoline tax refund on gasoline used in agricultural machinery. Without a cash ticket the farmer cannot get the refund. The saving in gasoline tax refunds usually more than covers the finance company's charge.

The plan resulted in a sales increase of 35 to 275 per cent in 1929, the first year the plan was in full operation[1]. An increase of 15 per cent on top of that for a year like 1930 should remove any doubt as to the feasibility of the plan.

Virtually no changes have been found necessary in the plan as originally drafted by Mr. Kent and his associates.[2] The finance company and the oil company operate as separate units, but through the loan system of the finance company the oil company is permitted to operate on a strictly cash basis.

The finance company handled $66,857.94 worth of finance certificates in 1930 covering deliveries of merchandise made by the Kent Oil Co. to its customers. These certificates were secured by notes which in turn were secured by adequate collateral.

There has been only one foreclosure in the entire time the plan has been in operation!

This one foreclosure was not on sales of petroleum products made after the plan was adopted, but on a former "open account" business which the company had written off the books but decided to clean up under the finance plan.

Property obtained under this lone foreclosure, incidentally, became a "frozen asset." The foreclosure was on a number of cattle, in which another individual had a half interest. While the company was dealing with this individual for the purchase of his share, or the sale of the company's share to him, the cattle were frozen to death in the blizzard which swept over Kansas late in March.

Not all of the notes have been paid on the date they were due, but practically all of them are paid within 30 days after they are due.

"Our records today show that about 4 per cent of the notes are past due," Mr. Kent said recently. "Some of them were only one day past due. At present there is only one note more than 90 days past due. Human memory is incredibly short. Usually the second notice brings forth the remittance. Excuses seem to be in fashion but we have worked out this difficulty by having them of short duration through reminders having an air of imperativeness.

"We realize, of course, that climatic conditions will not al-

Cutting the Credit Overhead

GEORGE P. NISSEN, vice president of the Kent Oil Co., believes in keeping graphic records. For the past five years he has kept a record of the cost involved in selling gasoline "on credit."

Has the Farmers Finance Co. plan cut down those costs per gallon?

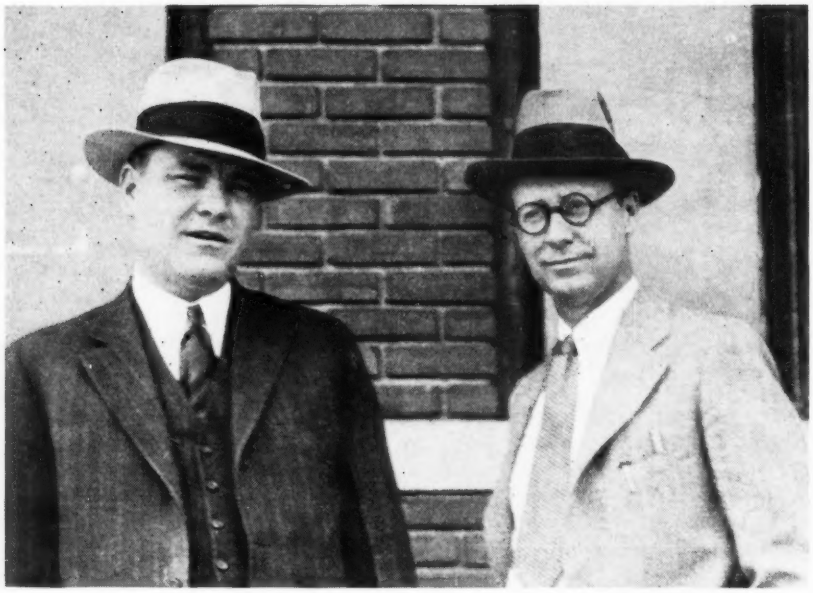
For 1926 "credit sales" of gasoline cost 0.2-cent a gallon for the handling of the accounts. In 1927 and 1928 the cost jumped to 0.36-cent a gallon.

Then the finance plan was put into effect. The cost in 1929 accordingly was 0.06-cent!

And in 1930 the cost was cut in half—to 0.03-cent!

[1] NATIONAL PETROLEUM NEWS, June 4, 1930, page 31, "Jobbers Finance Plan Boosts Sales 35 to 275 Per Cent in Year," by E. L. Barringer.

[2] NATIONAL PETROLEUM NEWS, May 8, 1929, page 108.



R. L. Kent, president, and George P. Nissen, vice president, Kent Oil Co.

ways permit a farmer to harvest or market his crop just when the note is due, and in most cases he depends on his grain crop to pay his notes for petroleum products furnished him.

"We have not deemed it advisable, or to our customer's interests, to exhibit hard boiled tactics in forcing settlement of the note on the day it is due. It would be folly for us to pursue a course of this kind. We have tried to co-operate with the customer. This leniency and co-operation with the farmers, we think, has permitted us to increase our good will many fold and later on additional business will be secured due to the good will thus created."

Mr. Nissen had occasion recently to accompany a collector on one of his trips to western Kansas. Weather conditions had been decidedly against the farmers in that area, but the attitude of those customers to the finance plan can be illustrated by the conversation Mr. Nissen had with one of those farmers.

"I'll tell you, George," the farmer said. "If I owed this money to your oil company, I could stall you or Rex Kent with excuses. But these finance companies mean business and I guess I'd better pay them right now."

It has been that attitude of respect for the "finance company" that has enabled the oil company to come through 1930 with that increase in business, the continued good will of its customers, and in a strictly cash position. The oil company, incidentally, is now rated as the largest independent jobbing company in the state.

Discussing the plan's success further, Mr. Kent said that, during 1929 and a portion of 1930, the oil company operated several stations on a strictly cash or finance basis.

"That is," he explained, "all sales were made either for cash or on credit contracts with the finance company. The other stations were operated on the basis of cash, finance or authorized credit.

"During the present year we have no authorized credit at any station. If the tank wagon agent sells anything for credit he is responsible for it and it will be deducted from his commission check at the end of 60 days from date of sale if not paid to us.

"This is not a hard boiled attitude on our part. Our observation has been that the other plan has enabled the major companies to absorb readily small independent jobbers throughout the country on account of excessive book accounts, many of which were not collectable.

"The success of the finance plan in 1929 and 1930 and the universal satisfaction of our customers using it gave us the impression that it was the correct principle upon which to operate a business.

"Our agents knew that, when merchandise was delivered to customers having a finance contract, they could depend upon getting 100 per cent of their commission, while under the old 'open account' or 'your credit is good with us' basis an agent might not receive compensation for his labor. We do not pay agents' commissions until we have received payment for the merchandise. All these finance contracts are amply secured which assures the agent his commission when the note covering the contract has been paid.

"It was very obvious to us that the plan has been entirely satisfactory to the customer, for every one who has used the plan and needed additional credit for his purchases of petroleum products has taken out new contracts. So far as we know there are no exceptions.

"It has enabled us to increase our sales per customer, for a customer having one of these finance contracts will invariably purchase his entire requirements from us rather than split his purchase. In the same manner it has also discouraged the five gallon and 10 gallon deliveries of gasoline. This is also true of lubricating oil deliveries. In this way we have been able to increase our sales with a minimum of labor both from our tank wagon agent and from our solicitors.

"Many of the applications for these finance contracts have been rejected due to insufficient security, and perhaps quite a little business has been lost on this account but most of it was unprofitable or questionable business. We would rather lose some business than to increase our charged off accounts or place them on our list of accounts of doubtful value.

"It is pleasing to look back over the figures and note that at every station our sales for 1930 exceeded the sales of any previous year with the exception of one station, and that came within 600 gallons of its best year.

"These increases were not only true in light oils but our lubricating oil sales increased from 10 to 250 per cent with the average around 30 per cent, and the grease sales increased an average of 80 per cent."

One-Stop Service Sends Back Jobber to Jobbing

By E. L. Barringer

N. P. N. STAFF WRITER

LANSING, MICH.

ONE-STOP service has been the means by which the Central Service Co., Lansing, Mich., has concentrated its sales efforts on jobbing rather than retailing petroleum products.

Not that the Central Service Co. looks with disfavor on the service station, but the company wanted to be free to develop the jobbing side of its business. Consequently the stations were turned over to operators who made them into one-stop outlets.

This change permitted the company to branch out into new jobbing lines. Last winter, for instance, it began the distribution of alcohol and distillates, buying in tank car lots.

The operators taking over the service stations turned to one-stop service as a means of increasing their revenues. Each operator was permitted to develop the one-stop service departments along the lines best suited for his neighborhood.

Petroleum products of course were sold by the Central Service Co. Lamp bulbs also are jobbed by the company in order that the operators might obtain the maximum discounts through quantity buying. But other accessories and sales lines are purchased direct from the automotive jobber by the station operator.

Whether this arrangement of allowing the station operator to purchase his accessories direct from an automotive supply jobber is a permanent one remains to be seen, in the opinion of L. D. Maxson, general manager of the company.

Developments might lead, he believes, to the oil company becoming a jobbing organization for replacement accessories as well as petroleum products. In this event the oil company would function as a central buying and distributing agency to its own retail outlets. This would provide the station operators with uniform quality of products, and the advantages of large scale buying through the central agency.

This is for replacement accessories. Tires and batteries might require a different setup, Mr. Maxson believes. With these lines a sales franchise for several counties might be desirable in order to allow the oil company to compete for the business of the larger consumers.

WHILE this type of sales organization relieves the company of retail selling, with more time to develop other jobbing markets, Mr. Maxson believes it also brings more capable men into the organization as operators of the retail outlets. The outlets of course are permanently a part of the Central Service Co., but they can be more aggressively managed since the operator makes a profit in proportion to his ability to merchandise.

The margin on gasoline has purposely been made low. At first the company permitted a gasoline margin that would allow the operator to pay the light and heat bills for his station. This feature was abandoned. It was found that when a station changed operators old light and heat bills were unpaid, so the company decided to avoid this situation by paying these bills itself in place of allowing it in the margin.

With the low margin on gasoline the station operator turns to other lines of goods that he can sell. This development naturally follows the bent of the operator, and in turn he is a better merchandiser for handling the lines most familiar to him.

A study of sales reports for some of the stations will illustrate the point. The first station will be designed as "Station A," and the report covers 12 months ended with November, 1930.

With a gasoline business of 42,000 gallons for this period the station sold $1,841.63 worth of accessories and labor. The operator of this station apparently developed the tire department as his principal one-stop service.

This department brought in a total of $596.83 for the twelve months. The sale of accessories was second with $406.64. Then

Sales at Five One-Stop Stations

Station Number	Number of months in report	Gasoline, gallons	Cars greased	Cars washed	Battery charging	Batteries	Tires	Accessories	Labor
A	12	42,000	333*	.....	$243.10	$153.50	$596.83	$406.64	$108.56
B	12	116,200	1,102	1,153	.....	.....	.....	243.32	.....
C	12	62,000	317	.....	202.75	106.20	.....	657.48	225.88
D	11	67,600	249	.....	267.80	414.85	1,229.66	1,227.61	503.29
E	8	45,700	333	177	66.75	222.15	262.58	311.53	190.09

*Dollar sales.

7 POINTS

- Testing Radiators
- Paint Spraying
- Tire Inflators
- Tire Inspectors
- Greasing Systems
- Cleaning Parts
- Spraying Springs

WHERE

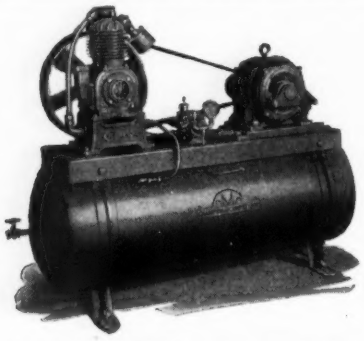
The brand of Service

you can give

your customers

depends on

the Service



YOUR COMPRESSOR GIVES YOU

Be sure you have a compressor that *helps* you give good service—one that furnishes a Sufficient and Dependable supply of air. CHAMPION Compressors are that kind. Send in the coupon for information on this Service-Improving line of Compressors and other Service Equipment.

Compressor shown above is Single Stage Equipment Model SE-27—Designed for the Garage or Service Station having big demands for Air. Delivers 15 cu. ft. of air per minute. Working pressure 150 lbs. Furnished with 60 or 80 gallon tank. 3 h.p. motor. Air Cooled—Fully Automatic—Silent.

CHAMPION

Pneumatic Machinery Co.

8168 South Chicago Avenue

Chicago, Illinois

CARE WILL SAVE YOUR CAR

Champion Pneumatic Machinery Co.,
8168 S. Chicago Ave., Chicago, Ill.

Please send me complete information regarding CHAMPION ☐ Air Compressors, ☐ Service Towers, ☐ Ceiling Reels, ☐ Car Washers, ☐ Paint Spraying Equipment, ☐ Air Scales.

Name.....

Address.....

City..... State.....

came batteries and battery charging; $153.50 for the sale of batteries and $243.10 for charging. This station also took in $333 from greasing. The labor classification, probably tire changing and any minor adjustments, brought in $108.56.

"Station B" was operated with petroleum as the principal sales item. During the same 12-month period this station sold 116,200 gallons of gasoline. It also washed 1153 automobiles, and greased 1102 cars. The only outside item sold was listed under accessories, and these sales amounted to $243.32.

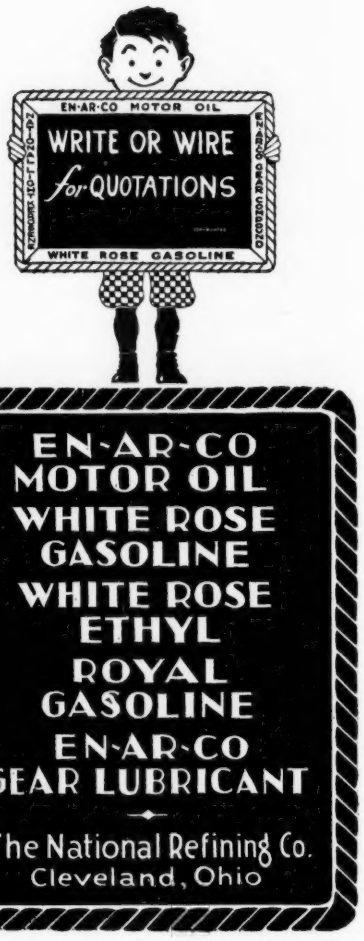
"Station C" apparently was operated by a merchandiser with a bent towards accessories. In the same 12-month period he sold 62,000 gallons of gasoline, but took in $657.48 from the sale of accessories. His battery sales were $106.20, and he received $202.75 from charging batteries. Labor, again tire repairing and minor adjustments, brought in $225.88. Total income, aside from petroleum products and lubrication, amounted to $1196.31.

The one-stop station departments in "Station D" were quite lucrative. For eleven months ended with November, 1930 this station took in $3,643.21 from these departments, with a gasoline business of 67,600 gallons.

Tires led the list of one-stop departments, but accessories was only $2.05 in the rear. From the sale of tires this station took in $1229.66 in the 11 months, while tire repairing and other items under the labor classification amounted to $503.29.

Accessories brought in $1227.61. The sale of batteries was $414.85, and battery charging $267.80.

The report on "Station E" covers only eight months, ended with November, 1930, but in this period one-stop department sales amounted to $1053.10 while 45,700 gallons of gasoline were sold. Accessories predominated at this station, with $311.53 worth of merchandise sold. Then came tires with $262.58, followed by batteries with $222.15. Battery charging brought in $66.75, and labor $190.09.



For

Over 21 Years

Oil men have been buying their fire insurance through us at a

MATERIAL SAVING IN COST

We invite your inquiries

National

Petroleum Mutual

Fire Insurance Co.

437 CHESTNUT ST.
PHILADELPHIA

McDuffie Wages Fighting Advertising Campaign to Restore Richfield

LOS ANGELES, May 18

THEORETICALLY, at least, Richfield Oil Co. of California, is thought to have better than an even chance to surmount the obstacles that caused its affairs to be placed in the hands of a receiver, Jan. 15, last.

In directing the line of attack, aimed at restoring the company to third place among major Pacific Coast marketing companies, Receiver William C. McDuffie, first inaugurated economies in operations and then launched a direct-appeal advertising campaign.

A recent report by the Richfield receiver stated that at the time of the receivership action, the company's sales were sharply declining, and that during the fourth quarter of 1930 the sales declined 19.6 per cent from those during the third quarter and 16.8 per cent from those in the fourth quarter of the previous year.

This loss was attributed, both to the company's financial distress, prior to the receivership, and to the unbalanced g a s o line price structure, which allowed small independent refineries to undersell the larger refineries five and six cents a gallon.

The psychological effect of the receivership action on the public mind threatened an additional loss in gallonage, and it was in an effort to counteract this danger as well as to regain the lost gallonage that active steps were taken through the medium of advertising and personal contact with the dealers.

This story is concerned chiefly with the rather unique advertising campaign adopted by the company. Although actual results obtained are somewhat complicated by the drastic gasoline-war now raging on the Pacific Coast, it was determined that at the time the war started—Feb. 25—the company's declining sales curve had leveled out and practically no old dealers were being lost and new dealers were being secured.

Richfield introduced "fighting copy" to regain public confidence and to reestablish consumer demand. The advertising plan was based on the theme that "Everyone loves a fighter," as exemplified by the fact that a fighter who refuses to be licked, one who when knocked down, comes back fighting harder than ever, often wins the admiration and the respect of the crowd.

Other factors were also emphasized in the advertising copy—such as the traditional quality of the company's products, its public-spirited activities and its importance to western industry and western prosperity. The following copy appeared in newspapers under the caption "The Greatest Fighting Spirit in Industry that I have known" signed by Wm. C. McDuffie, receiver Richfield Oil Co. of California.

"One of the thrills that has made American business the compelling interest that it is, has been Richfield's fight on its way up from a small marketer to its high place among major oil companies.

"Now Richfield is fighting again.

"The same spirit that built for it a prominent position in the nation's oil industry is on the job. That spirit plus the sheer merit of its products.

"Richfield's confidence in the ultimate outcome is based upon these three factors:

"One—an exceptional marketing organization, including thousands of independent dealers . . . loyal, able and glad to serve you well.

"Two—the outstandstanding quality of its

Out After Its Greatest Victory!
YOU'VE READ many times about Richfield's racing records and victories...on land...in the air ...on water. Richfield has won more world's records and speedway victories than all other gasolines combined.
In 1930 alone, Richfield added more than 170 major victories and world's records to its already amazing list of triumphs.
Now Richfield is fighting for the greatest victory in its history. Fighting to maintain its high position in the petroleum industry. Fighting to reestablish its financial stability. A friendly receivership has been placed in control to hasten this victory.
Richfield is fighting hard! And its confidence in the outcome is based on the sheer merit of its products and the ability and loyalty of its splendid marketing organization with thousands of independent dealers.
Richfield is such an integral part of the west . . . has built to such prominence in the petroleum industry . . . is so important to the livelihood and welfare of thousands...that it confidently solicits a continuation of your patronage.
You can always count on the quality of Richfield products.
May we count on you?
RICHFIELD
the GASOLINE OF POWER
RICHFIELD
THE GASOLINE OF POWER

One of a series of newspaper ads Richfield Oil Co. is running to enlist public support in its reorganization effort

products that has made the name Richfield famous the world over.

"Three—its fighting spirit.

"Don't forget that Richfield is an important factor in western industry and western prosperity. Don't forget that thousands depend upon Richfield for their livelihood and welfare. Don't forget that Richfield is an integral part of the west . . . and a prominent part.

"But beyond all . . . remember that when you buy gasoline you cannot get a better gasoline than Richfield. When you fill it up with Richfield you are not only doing yourself and your motor a service . . . but you are taking a part in helping to hasten the rehabilitation of a great western company."

ANOTHER piece of copy even more typical of the fighting theme was one headed with the caption "A healthy Sock in Each Fist." Over this was posed the figure of a pugilist, crouched in fighting pose with gloved fists extended. The text of the copy read as follows:

"Richfield is fighting. Only the first round is over. The fighting heart that built Richfield from a small local marketer to one of the major oil companies in the United States is on the job.

"Richfield is fighting . . . before the largest audience of any championship scrap. Not only are the eyes of its friends in the west on it . . . but the entire petroleum industry is interested in the outcome. Two factors give Richfield confidence . . . it still has a healthy wallop in each hand.

"In one hand, there is the Richfield organization, the merchandising and marketing unit that has been the envy of the petroleum industry. At home and in the field . . . in the direct employees and through the thousands of independent dealers . . . there is today a loyal spirit more firmly welded together than ever before.

"In the other hand, of super importance to the motoring public, there is the oustanding quality of Richfield products. From its earliest days, Richfield has never faltered, has never wavered, in producing the finest gasoline and lubricating oils that refining ability and engineering skill could put forth.

"Richfield wants your support . . . not alone because of its importance to western prosperity and western industry . . . but because you will receive from Richfield the fine, sterling character of petroleum products that has made its name famous the world over."

These two pieces of copy are only types of the series used to impress the fight Richfield is making. Before any advertising was released, however, the idea back of the campaign was taken out into the field and "sold" to the various branches of the company. "Blow-ups" of the newspaper advertisements were used in this work to make the campaign as impressive as possible. The effect of the at-home campaign had the desired effect of restoring the morale of the organization that had been badly shattered by the continual reverses suffered by the company during the past year.

News stories, telling of the company's fight were sent out to the leading newspapers on the Coast. They were widely used due to the fact the Richfield's situation was a live topic of conversation and of interest to thousands of people.

RADIO was utilized as a major part of the campaign—with a nightly broadcast over chain and independent stations. These were in the form of straight announcements modeled after the "fighting copy" used in the newspapers and on bill-boards. These announcements were tied in each night with news events of the day.

For example, when the news "broke" that Captain Sir Hubert Wilkins was making final preparations for his submarine trip to the North Pole, this was broadcast as part of the Richfield program and tied in with Wilkins' flight over the North Pole in 1928—made with Richfield gasoline.

No music or entertainment of any kind was employed in connection with the talks as it was felt that the company had a straight selling job to do and might be subject to criticism if it employed expensive talent to supplement its talks at such a time.

In an appeal to its dealers, the company prepared reproductions of the newspaper and outdoor poster advertising that were headed by the line, "Richfield is Fighting" and the following annotation:

"All of you who have been affiliated with Richfield know that 'Richfield never quits.' Its many victories in the past in fighting for itself and for the independent dealers have demonstrated that fact.

"Now Richfield is fighting again . . . for the greatest victory in its history.

"Richfield knows it can count on the independent dealer and it is therefore backing up its dealers with one of the greatest advertising campaigns in history.

"FIGHTING copy is appearing every week in a large list of newspapers throughout the Pacific Coast.

"Our outdoor advertising program is one of the largest we have ever had on the boards.

"Radio is being used with special announcements over the United Broadcasting System, a chain of nine stations. Dealer helps, of course.

"You know how much a good game fight can accomplish. This advertising will help you sell more gallonage and help Richfield Win Again."

Perhaps one of the most unusual features of the campaign was the parade of Richfield trucks through the main arteries of leading cities on the coast. This "stunt" was put on to dramatize the company's fight and each truck carried large banners bearing the legend "Another tank full of Ammunition for Richfield's Great Fight."

Alco Products, Inc., New York, has received an order for 750 tons of electric welded steel pipe for the city of New York. This pipe, 48-inch diameter, will be used for extensions to the water supply system in the Bronx. It will be fabricated in the plant of the American Locomotive Co., at Dunkirk, N. Y., of which the Alco company is a division.

Crude Production by Fields

By Telegraph—Daily average gross output, by fields in U. S., for week ending with dates below as compiled by A. P. I.

PRODUCTION SUMMARY

	May 30	May 23
Production east of Rockies	1,933,750	1,900,450
Increase		33,300
Total production in U. S.	2,462,150	2,437,150
Increase		25,000
Crude oil imports	163,715	104,145
Increase		59,570
Total new crude supply	2,625,865	2,541,295
Increase		84,570

OKLAHOMA

	May 30	May 23
Allen Dome	11,800	11,950
Asher	650	650
Asher, West	6,850	7,350
Blackwell	2,950	2,900
Bowlegs	14,900	15,600
Braman	2,100	2,100
Bristow-Slick	12,800	12,750
Burbank	13,000	13,000
Carr City	13,150	14,500
Cromwell	4,900	4,850
Cushing	13,200	13,200
Davenport	900	900
Duncan Dist.	6,450	6,450
Earlsboro	19,400	19,300
Earlsboro, E.	17,900	19,250
Earlsboro, So.	5,300	5,100
Garber	3,900	3,900
Graham	4,050	4,100
Healdton	11,250	11,000
Hewitt	6,000	6,100
Hubbard	1,000	1,000
Konawa	8,950	9,250
Little River	24,800	25,150
Little River, E.	5,750	6,000
Logan Co.	3,700	3,650
Maud	2,500	2,550
Mission	8,900	9,600
Oklahoma City	133,000	143,400
Okmulgee, No.	9,150	9,100
Okmulgee, So.	5,350	4,950
Osage (Outside Burbank)	22,500	22,950
Papoose	2,000	2,000
Pearson	650	600
Sasakwa	2,400	2,400
St. Louis	22,950	22,850
Scholem-Alechem	13,500	13,400
Searight	4,350	4,600
Seminole	13,950	14,150
Seminole, East	1,750	1,800
Thomas	600	600
Tonkawa	5,700	5,700
Wewoka	9,150	9,200
Yale-Jennings	5,950	5,950
Others	47,700	46,900
Total, Okla.	527,700	542,700
Decrease		15,000

KANSAS

	May 30	May 23
Augusta-Fox Bush	2,750	2,800
Churchill	3,150	3,150
El Dorado-Towanda	12,600	12,600
Florence-Covert	850	850
Greenwood Co.	15,750	15,750
Oxford	2,150	2,200
Peabody-Elbing	2,400	2,400
Rainbow Bend	1,450	1,450
Ritz	6,600	5,200
Russell	3,350	3,350
Sedgwick Co.	16,550	17,100
Voshell	18,200	18,200
Others	21,000	21,500
Total, Kans.	106,800	106,550
Increase		250

NORTH LOUISIANA

	May 30	May 23
Caddo, light	7,200	7,100
Caddo, heavy	2,750	2,750
Cotton Valley	1,850	1,850
De Soto and Red River	2,650	2,700
Haynesville	5,700	5,700
Holly	500	550
Homer	3,250	3,250
Sarepta		
Carterville	1,200	1,150
Urania	4,450	4,450
Zwolle	7,550	7,900
Others	1,500	1,500
Total, N. La.	38,600	38,900
Decrease		300

ARKANSAS

	May 30	May 23
Champagnolle	2,950	3,000
El Dorado	3,600	3,600
Lisbon	700	700
Nevada	1,000	1,000
Smackover, light	4,250	4,250
Smackover, heavy	31,300	31,550
Stephens	850	850
Others	1,600	1,700
Total, Ark.	46,250	46,650
Decrease		400

ROCKY MOUNTAIN

Wyoming

	May 30	May 23
Big Muddy	1,850	1,900
Elk Basin	700	600
Grass Creek	2,050	2,050
Labarge	1,150	1,000
Lance Creek	250	200
Lost Soldier	3,850	4,350
Oregon Basin	1,450	1,400
Rock River	1,950	1,950
Salt Creek	24,800	25,850
Others	4,200	3,650
Total, Wyo.	42,250	42,950
Decrease		700

Montana

	May 30	May 23
Cat Creek	1,050	1,050
Pondera	1,950	1,300
Sunburst	4,400	4,400
Others	1,250	1,350
Total, Mont.	8,650	8,100
Increase		550

Colorado

	May 30	May 23
Florence	500	300
Fort Collins	1,000	1,000
Moffat (Craig)	900	950
Others	1,650	1,700
Total, Colo.	4,050	3,950
Increase		100

New Mexico

	May 30	May 23
Artesia	650	550
Bal. Eddy Co.	300	300
Hobbs High	38,800	36,600
Bal. Lea Co.	4,350	4,350
Hogback	450	450
Rattlesnake	1,050	1,050
Table Mesa	100	100
Total, N. M.	45,700	43,400
Increase		2,300
Total, Rocky Mountain	100,650	98,400
Increase		2,250

TEXAS (OUTSIDE GULF COAST)

Panhandle District

	May 30	May 23
Carson Co.	4,950	4,400
Gray Co.	45,600	45,600
Hutchinson Co.	9,650	8,800
Wheeler Co.	300	250
Others	1,300	200
Total	61,800	59,250
Increase		2,550

North Texas

	May 30	May 23
Archer Co.	12,100	12,000
Burkburnett	6,400	6,400
Electra	9,200	9,200
Iowa Park and K. M. A.	3,450	3,500
Montague-Cooke	5,300	4,300
Wilbarger	10,050	10,300
Young Co., No.	8,850	8,900
Others	1,150	1,150
Total, North Texas	56,500	55,750
Increase		750

West Central Texas

	May 30	May 23
Brown Co.	3,600	3,500
Callahan Co.	2,400	2,300
Coleman Co.	2,000	1,950
Eastland-Desdemona	4,000	3,700
Jack Co.	1,150	1,200
Palo Pinto Co.	400	350
Shackleford Co.	3,800	3,750
Stephens Co.	4,500	4,500
Throckmorton	350	350
Young Co., So.	3,300	3,300
Others	900	900
Total, West Cen. Tex.	26,400	25,800
Increase		600

West Texas

	May 30	May 23
Crane and Upton Cos.	23,500	23,700
Crockett Co.	1,700	1,750
Ector Co.	7,700	7,300
Howard Co.	29,200	29,350
Jones Co.	1,400	1,400
Mitchell and Scurry Cos.	2,000	1,950
Reagan Co.	18,950	18,450
Winkler Co.	44,400	45,100
Yates	71,300	71,300
Bal. Pecos Co.	3,250	3,500
Others	7,200	7,300
Total, West Texas	210,600	211,100
Decrease		500

East Central Texas

	May 30	May 23
Boggy Creek	1,900	2,100
Corsicanna-Powell	4,200	4,150
Currie	250	300
Mexia	3,500	3,500
Nigger Creek	150	150
Richland	100	100
Van Zandt	45,000	42,550
Wortham	500	500
Others		50
Total, East Cen. Tex.	55,600	53,400
Increase		2,200

East Texas

	May 30	May 23
Rusk Co.:		
Joinerfield	123,800	118,000
Kilgore	156,100	124,250
Gregg Co.:		
Longview	71,000	61,500
Total, East Texas	350,900	303,750
Increase		47,150

Southwest Texas

	May 30	May 23
Chapman Abbot	3,500	3,650
Dale	300	300
Darst Creek	20,000	19,600
Laredo Dist.	13,400	13,100
Luling	8,650	8,600
Lytton Spgs.	700	700
Salt Flat	12,500	12,200
Somerset	1,250	1,250
Others	250	250
Total, S. W. Texas	60,550	59,650
Increase		900
Total, Texas (Outside Gulf Coast)	822,350	768,700
Increase		53,650

GULF COAST

Coastal Texas

	May 30	May 23
Barbers Hill	26,000	28,850
Batson	1,000	1,000
Big Creek	2,900	2,750
Blue Ridge	1,200	1,200
Boling	900	950
Damon Mound	1,250	1,300
Esperson	2,000	2,000
Fannett	500	500
Goose Creek	4,400	4,500
Hankamar	2,650	2,850
Hull	6,650	6,800
Humble	9,500	9,300
Moss Bluff	300	350
No. Dayton	500	500
Orange Co.	1,800	1,800
Orchard	800	900
Pettus	7,050	7,150
Pierce Junct.	9,100	10,250
Port Neches	1,350	1,400
Raccoon Bend	7,950	8,250
Refugio Co.	29,500	30,300
Saratoga	1,000	1,050
Somerville	2,150	2,400
Sour Lake	1,900	1,900
So. Liberty	1,900	1,950
Spindletop	9,050	9,250
Sugarland	11,200	11,600
W. Columbia	4,150	4,100
Others	1,850	1,300
Total, Coastal Texas	150,500	156,450
Decrease		5,950

Coastal Louisiana

	May 30	May 23
Edgerly	350	350
Evangeline	650	650
Hackberry, E.	1,450	1,650
Hackberry, Old	750	750
Lake Barre	1,800	2,000
Lockport	6,950	7,550
Port Barre	1,700	1,700
Sulphur Dome	4,400	4,400
Vinton	5,900	5,600
White Castle	1,000	1,000
Others	4,950	5,150
Total, Coastal La.	29,900	30,800
Decrease		900
Total, Gulf Coast	180,400	187,250
Decrease		6,850

CALIFORNIA

	May 30	May 23
Dominguez	11,600	11,500
Elwood-Goleta	34,200	34,300
Huntington Beach	21,000	21,100
Inglewood	16,000	15,800
Kettleman Hills	37,800	43,300
Long Beach	85,500	86,700
Midway-Sunset	51,600	51,600
Playa del Rey	30,000	28,600
Santa Fe Spgs.	72,300	72,300
Seal Beach	13,500	15,100
Ventura Ave.	42,400	42,500
Others	112,500	113,600
Total, Calif.	528,400	536,700
Decrease		8,300

EASTERN

	May 30	May 23
(Not including Mich.)	102,800	103,000
Decrease		200

MICHIGAN

	May 30	May 23
Mt. Pleasant	6,300	6,400
Muskegon	1,750	1,750
Saginaw	150	150
Total, Mich.	8,200	8,300
Decrease		100

Compilation Of Mid-Continent Refinery Operations

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Mid-Continent Refinery Operations, Week Ended May 29 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	West Texas	North La.-Ark.	Total Week Ended May 29
Plants Reporting	10	23	23	10	10	76
Da. Av. Cap. (bbls.)	94,000	162,500	107,400	71,500	60,700	496,100
Da. Cracking Capacity	53,200	64,600	23,100	26,250	31,700	198,850
Da. Av. Crude Runs	60,412 + 6.3	99,619 — 4.5	55,283 — 0.2	35,951 — 10.6	49,838 + 1.8	301,103 — 1.5
Da. Av. Other Oil	4,945 + 36.7	3,907 + 18.3	3,058 + 27.0	166 ...	17,874 — 9.2	29,950 — 2.7
GASOLINE—Gallons						
Stocks, May 22	26,430,000	52,822,000	30,472,000	16,080,000	4,520,000	130,324,000
Prod. 5-22 to 5-29	11,614,000 + 9.8	17,272,000 — 3.1	8,609,000 + 5.6	3,606,000 — 7.0	7,348,000 + 4.2	48,449,000 + 2.0
Ship. 5-22 to 5-29	11,698,000 + 9.0	18,612,000 + 8.3	9,568,000 — 1.9	3,088,000 + 2.7	7,136,000 + 1.7	50,102,000 + 5.0
Stocks, May 29	26,346,000 — 0.3	51,482,000 — 2.5	*26,573,000 —12.8	16,598,000 + 3.2	4,732,000 + 4.7	*125,731,000 —3.5
Ratio Sales to Prod.	100.7%	107.8%	111.1%	85.6%	97.1%	103.4%
KEROSINE—Gallons						
Stocks, May 22	6,713,000	13,236,000	1,806,000	23,000	479,000	22,257,000
Prod. 5-22 to 5-29	1,860,000 + 29.0	1,736,000 — 16.7	858,000 — 1.7	....	525,000 — 2.1	4,979,000 + 0.9
Ship. 5-22 to 5-29	1,566,000 — 18.9	2,658,000 + 15.0	973,000 + 10.2	....	269,000 — 27.9	5,466,000 — 0.7
Stocks, May 29	7,007,000 + 4.4	12,314,000 — 7.0	1,691,000 — 6.4	23,000	735,000 + 53.4	21,770,000 — 2.2
Ratio Sales to Prod.	84.2%	153.1%	113.4%	.....	51 2%	109.8%
STOVE DISTILLATE—Gallons						
Stocks, May 22	868,000	5,955,000	558,000	100,000	50,000	7,531,000
Prod. 5-22 to 5-29	436,000 — 21.6	1,152,000 +129.0	128,000 +374.1	36,000	....	1,752,000 + 50.1
Ship. 5-22 to 5-29	440,000 + 0.7	406,000 — 27.9	143,000 + 81.0	35,000 — 31.4	15,000 — 71.7	1,039,000 — 12.2
Stocks, May 29	864,000 — 0.5	6,701,000 + 12.5	543,000 — 2.7	101,000 + 1.0	35,000 — 30.0	8,244,000 + 9.5
Ratio Sales to Prod.	100.9%	35.2%	111.7%	97.2%	....	59.3%
GAS OIL—Gallons						
Stocks, May 22	4,710,000	35,804,000	2,907,000	4,621,000	8,522,000	56,564,000
Prod. 5-22 to 5-29	860,000 + 0.7	2,524,000 + 19.8	754,000 +1008.8	458,000 — 8.8	2,733,000 — 1.8	7,329,000 + 16.1
Ship. 5-22 to 5-29	441,000 — 29.6	571,000 — 50.7	480,000 + 44.6	560,000 — 9.5	2,620,000 + 0.6	4,672,000 — 12.5
Stocks, May 29	5,129,000 + 8.9	37,757,000 + 5.5	3,181,000 + 9.4	4,519,000 — 2.2	8,635,000 + 1.3	59,221,000 + 4.7
Ratio Sales to Prod.	51.3%	22.6%	63.7%	122.3%	95.9%	63.7%
FUEL OIL—Gallons						
Stocks, May 22	12,848,000	54,505,000	64,098,000	24,589,000	18,980,000	175,020,000
Prod. 5-22 to 5-29	4,599,000 — 2.6	5,691,000 — 4.9	5,613,000 — 13.2	5,126,000 — 10.6	5,023,000 — 10.8	26,052,000 — 8.7
Ship. 5-22 to 5-29	4,287,000 — 6.1	7,411,000 + 22.3	5,401,000 + 2.2	4,169,000 — 2.2	4,518,000 — 12.4	25,786,000 + 1.8
Stocks, May 29	13,160,000 + 2.4	52,785,000 — 3.2	64,310,000 + 0.3	25,546,000 + 3.9	19,485,000 + 2.7	175,286,000 + 0.2
Ratio Sales to Prod.	93.2%	130.2%	96.2%	81.3%	89.9%	99.0%

Gasoline Produced by Various Methods, Week Ended May 29

	Kansas	% of Total	Oklahoma	% of Total	North & Cent. Texas	% of Total	West Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run	6,029,000	51.9	11,043,000	63.9	5,081,000	59.0	3,266,000	90.6	3,643,000	49.6	29,062,000	60.0
Cracked	4,285,000	36.9	5,035,000	29.2	2,264,000	26.3	205,000	5.7	2,794,000	38.0	14,583,000	30.1
Natural	1,300,000	11.2	1,194,000	6.9	1,264,000	14.7	135,000	3.7	911,000	12.4	4,804,000	9.9
Total	11,614,000		17,272,000		8,609,000		3,606,000		7,348,000		48,449,000	

+ or — columns are % change from previous week.
*2,940,000 gallons transferred to gasoline pipeline storage and terminal working stocks.

Drafts Continue on Mid-Continent Gasoline Stocks

Staff Special—By Telegraph

TULSA, June 2

GASOLINE shipments from Mid-Continent refineries that report their operating statistics to NATIONAL PETROLEUM NEWS increased 2,300,000 gallons in the week ended May 29. Shipments were larger than shipments the preceding week from all districts except North Texas.

Crude oil runs averaged 4600 barrels less daily average but gasoline output increased 900,000 gallons. Gasoline stocks at refineries were reduced 4,050,000 gallons but 2,490,000 gallons were transferred to pipe line stocks. Net reduction in gasoline stocks for the week was 1,560,000 gallons. Gasoline stocks were reduced in all but the West Texas and Louisiana-Arkansas districts.

Kerosine production was virtually unchanged and stocks were reduced 400,000 gallons. Distillate stocks increased 700,000 gallons. Fuel and gas oil stocks increased.

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended May 29. Change in stocks figures from May 1.

GASOLINE

	Gallons
Production	192,436,000
Shipments	197,215,000
Net change in stocks	—4,779,000
Ratio sales to production	102.5%

KEROSINE

	Gallons
Production	20,140,000
Shipments	22,206,000
Net change in stocks	—2,066,000
Ratio sales to production	110.3%

STOVE DISTILLATE

	Gallons
Production	5,221,000
Shipments	4,658,000
Net change in stocks	+563,000
Ratio sales to production	89.2%

GAS OIL

	Gallons
Production	28,319,000
Shipments	20,628,000
Net change in stocks	+7,691,000
Ratio sales to production	72.8%

FUEL OIL

	Gallons
Production	110,705,000
Shipments	103,088,000
Net change in stocks	+7,617,000
Ratio sales to production	93.1%

N. P. A. Prepares Digest Of Pipeline Rates

WASHINGTON, June 1.—At no time since oil pipelines were made subject to the interstate commerce law has there been such activity in the filing of tariffs showing the charges of such transportation agencies. Seldom a day has passed in the last three months that some pipeline tariff has not come to the files of the Interstate Commerce Commission.

With a view to keeping the industry advised as to changes, Fayette B. Dow and Willis Crane, of the Washington office of the National Petroleum Association, have brought to date as nearly as may be, the digest of pipeline tariffs, begun more than a year ago. By means of supplements thereto the digest has been brought up to May 1.

The digest shows rates for line-haul transportation and gathering charges as shown in tariffs on file with the regulating body, together with a list of the names of the pipeline companies and the names and addresses of officers filing the tariffs. The digest will be brought forward from time to time as the additions of tariffs or supplements or reissues thereof reach the files of the commission warrant.

Filing of the fundamental tariffs of the Great Lakes Pipe Line Co. caused a big increase in the need for digests because they introduced a method for making pipe-rail rates the like of which was unknown in transportation before that time. Then came the fundamental Phillips pipeline tariffs to increase the volume.

Each company supplements its foundation tariffs with added points of origin and destination as it extends its pipes. They come so fast that it is not safe to say that this or that is the latest. One of the latest, however, went into effect today.

It was Great Lakes I.C.C. No. 2 establishing a rate of 91.5 cents a barrel on gasoline from Barnsdall, Okmulgee, Ponca City and West Tulsa, Okla. to Des Moines, Osceola, Ia. and Osborn, Ridgeway, Mo., minimum 50,000 barrels; also proportional rates to Des Moines to be used in making pipe-rail rates to rail destinations beyond Des Moines, on the basis laid down in the tariff in which the Great Lakes offered to carry to Kansas City by pipeline.

That basis is a shrinking of the pipeline rate to Des Moines to a figure, which, when added to the rail rate beyond the end of the pipeline will give a total figure equal to the all-rail rate between the same points.

The Great Lakes foundation tariff, the one to Kansas City, is shown in the National Petroleum Association Digest No. 2, supplement 6.

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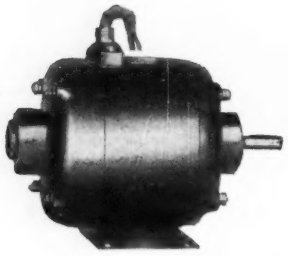
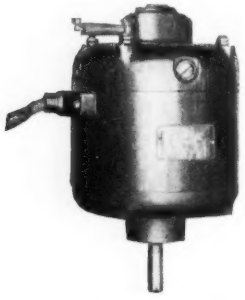
Specify G-E MOTORS



G-E fractional-horsepower motor for horizontal operation



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SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

Refinery - Tank Wagon Markets

Oil Markets Generally Unchanged Trading Lags in Most Areas

CLEVELAND, June 1

OIL market conditions were generally unchanged the last week in May. Refined oil prices in some of the more important areas continued to pursue their downward trend; in others they were holding their own fairly well. Retail gasoline markets generally were steady. Price cutting increased in the east, but prices were relatively steady in other areas.

Perhaps the most important development of the week was the downward revision of crude oil prices which major purchasers made in east Texas. Markets in all parts of the Mid-Continent became unsettled.

The east Texas cut did not have the effect of lowering refined oil prices in the Mid-Continent to any great extent. It did, however, slow up buying considerably and created fear on the part of the trade that crude prices in other Mid-Continent sections would be reduced. Previously the same prices had been posted for east Texas crude as for other crudes commonly known as Mid-Continent crude.

As this is being written, Stanolind Crude Oil Purchasing Co. announces a reduction of 18 to 30 cents a barrel in the prices it will pay for crude oil in all parts of the Mid-Continent where it is a common purchaser.

The Mid-Continent natural gasoline market was bolstered substantially by the placing of an export order for stabilized material. Several manufacturers shared in the order which was said to have called for 2,000,000 to 3,000,000 gallons of gasoline.

The third grade gasoline plan made further headway in the east. Pure Oil Co. began offering a third grade at 13 of its service stations in Philadelphia. Sinclair Refining Co. offered "Sinclair Green" for sale at its stations in and around metropolitan New York.

Atlantic seaboard tank car markets were unhampered by the progress of the third grade of gasoline. Prices remained generally steady with U. S. Motor at 5.75 to 6 cents at New York harbor.

Interest of the West Coast trade centered largely around persistent reports to the effect that crude and refined oil prices would be advanced in the very near future. This, however, did little to stimulate tank car buying.

Cargo markets were quiet. Foreign interest lagged and while several cargoes of light oils were said to have been sold for intercoastal shipment, the reports lacked confirmation.

Holiday Gasoline Buying Active at Chicago

Staff Special

CHICAGO, May 29

ANTICIPATION of heavy gasoline consumption over the two-day Memorial Day holiday stimulated gasoline buying in the Chicago market in the week ended May 30, but failed to prevent spot tank car prices from moving lower. This decline was gradual with small quantities of material appearing at lower prices during the week, culminating in open reductions in prices by most traders late in the week.

Despite the downward trend of prices which has prevailed for some time, opinions among Chicago distributors indicated they believed the bottom had about been reached. Bids for supplying the Chicago post office with its requirements of U. S. Motor gasoline for the period from July 1 to Sept. 30 were opened and revealed opinions of a higher market.

Seven companies made bids based on the average tank car prices on date of shipment, varying from the actual average to 0.375 cents below. Of these seven bidders, five set a maximum price of 3.50 cents, one set 3.25 cents and the other, 3 cents. Four flat rate bids were made, ranging from 3 cents to 3.50 cents for the three months' period.

Most Chicago traders reported a fairly good spot demand for U. S. Motor gasoline and an excellent movement of gasoline to contract jobbers. Sales generally were on a basis of an 0.125 to 0.25 cent lower than at the end of the previous week. Despite the downward trend of regular gasolines, the anti-knock grades showed signs of advancing, according to many sellers. They reported that several refiners who had been making considerable quantities of anti-knock gasoline from Arkansas crude had started using East Texas crude and were practically out of the market.

Sales of U. S. Motor gasoline were mostly on a basis of 2.625 to 3 cents as the week ended. Earlier in the week, 2.75 cents had represented the general low of the range. Reports of sales as low as 2.50 cents were heard, but these were unconfirmed in most instances and practically all carlot marketers said that 2.625 cents was the lowest at which they could sell.

Most traders said the bulk of their sales were for prompt shipment and that they did not like to sell much for future delivery. One buyer said he had tried to get U. S. Motor for July shipment but was unable to obtain gasoline at under 3.50 cents.

Naphthas were in steady demand although prices were lower in several

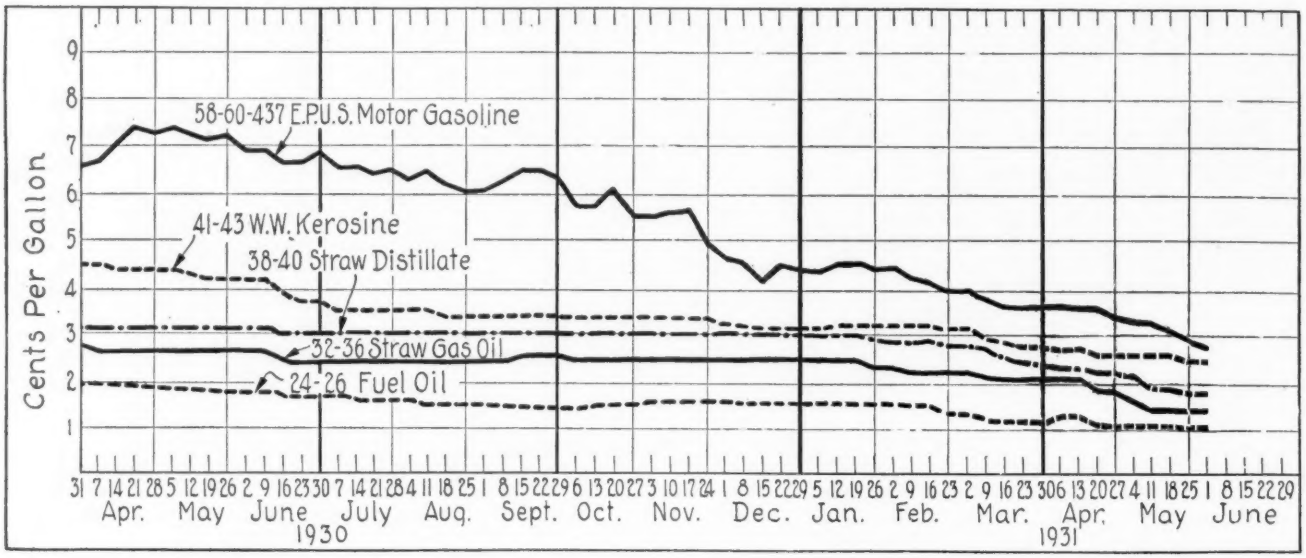
Summary of Group 3 Quotations for U. S. Motor Gasoline, 437 E.P.

In Effect June 1

Oklahoma	2.75 -3.00
Kansas	2.75 -3.125
North Texas	2.625-2.875
West Texas	2.625-2.875
Louisiana-Arkansas	2.875-3.25
Indiana-Illinois	2.75 -3.00

Prices are those quoted on the basis of f.o.b. Group 3 by refiners in the districts designated.

Current Prices of Principal Mid-Continent Refined Products



Prices shown are in Group 3 basis and extended to date shown in Refinery Market Table Section of this issue

quarters. Buyers said that good grades of 437 e.p. naphtha were still hard to obtain and they were having to pay more than for U. S. Motor gasoline in many cases. Kerosines were quiet with no changes noted in prices.

Distillates, gas and fuel oils were dull and were practically unchanged in prices. Most of the interest in these products centered around prices for next winter. Several major fuel oil distributors have offered contracts to home burner owners at prices about 1 cent under those prevailing last winter.

They Order Perfect Days

NEW YORK, June 1.—Its annual outing at Briarcliff on June 16 has been announced to members by the Oil Trades Association of New York in this novel manner:

"Again we have placed the following orders for your account . . .:

"First: One perfect, warm and sunshiny day . . .

"Second: Seats in classy auto-bus to carry you and your guests to the party!

"Third: Luncheon that will make you glad you came . . . also dinner . . .

"Fourth: All this for your pleasure . . . "

Golf, baseball, swimming, tennis and other games are on the sports program. A championship baseball game between the Petroleum Terrors and Awful Vegetoils is scheduled as the climax in the afternoon.

Albert J. Squier is chairman and Clifford T. Weihman, president of the association.

Banks Heads Traffic for Ashland

ASHLAND, Ky.—P. H. Banks, who has been for many years assistant traffic manager of the Indian Refining Co., Lawrenceville, Ill., has been appointed traffic manager of the Ashland Refining Co., according to Paul G. Blazer, general manager. Mr. Banks succeeds Stokely T. Rion, deceased.

Mr. Banks will also handle traffic for the Tri-State Refining Co. and the Swiss Oil Corp., affiliated with the Ashland company.

M. C. Dupree, formerly assistant traffic manager of the Ashland, has been made transportation manager, in charge of shipments and equipment.

Goes To Germany For McKee

HANNOVER, Germany.—Frederick W. Stone, consulting petroleum engineer of Tulsa, Okla., recently joined the engineering staff of the Arthur G. McKee Co., Cleveland, O.

Mr. Stone sailed with his family May 2 on the S. S. Europa for Hannover, where he will supervise the construction of a refinery which the McKee company is building for Gewerschaf "Elwerath."

Shipments From Southern California

LOS ANGELES, May 28.—Shipments of bulk petroleum from southern California ports to Foreign and Atlantic Seaboard ports totaled 1,309,304 barrels for week ended May 23 as compared with a total of 918,111 barrels shipped to the same ports a week ago. The increase in shipments was largely to Pacific Foreign ports. Destination and quantity of shipments were as follows:

Destination	Crude	Gasoline	Diesel	Kerosine	Gas oil	Fuel	Total
Pacific For.	198,149	276,211	63,899	10,858	57,105	284,239	890,461
Atlantic Dom.	.....	175,067	.....	.....	.....	.....	175,067
Atlantic For.	.....	243,776	.....	.....	.....	.....	243,776

Prices 10 Years Ago
May 30, 1921

	Oklahoma	Penna.
58-60 U. S. Motor	13.50-13.75	19.00-20.00
80-84 Natural	6.50-7.50	.....
Kerosine (41-43 Okla.; 47 w. w. Pa.)	2.50-2.75	7.00-7.25
Fuel Oil (24-26 Okla.; 36-40 Pa.)	$0.45-$0.50	4.00-4.25
Crude	$1.50	$3.00
Chicago tank wagon (no state tax)		20.00c

Prices A Year Ago
June 2, 1930

	Oklahoma	Penna.
58-60 U. S. Motor	6.8304	8.25-8.50
Grade A Natural	6.25	.....
Kerosine (Okla. 41-43; Pa. 47 w. w.)	4.00-4.25	5.625-6.25
Fuel Oil (Okla. 24-26; Pa. 36-40)	$0.70-$0.75	3.875-4.25
Crude (Okla. 35-35.9)	$1.255	$2.50
Chicago tank wagon (including 3c tax)		18.00c

Mid-Continent Refinery Markets

East Texas Crude Cut Disturbs All Markets

Staff Special
TULSA, May 29

THE crude oil price cut in east Texas May 26 tossed the Mid-Continent refinery market under a cloud of uncertainty the last week in May.

This situation was due largely to the speculation as to what reaction this cut would have on the other Mid-Continent districts. It was believed generally in Tulsa that unless the situation was adjusted soon in east Texas and prices advanced, a reduction in Oklahoma and Kansas crude would follow.

The reduction in east Texas had little immediate effect on refined oil prices. Refiners in that district had been buying their crude at under the posted prices for some time, with the result they could not take advantage of a formal reduction in that posted price by reducing quotations. Their costs actually were reduced very little.

The gasoline market meanwhile marked time following the crude price cut. Several refiners reported demand was good in anticipation of the Memorial Day week end, but most of the demand was in the nature of takings on contracts. Spot buying was only slightly larger in volume, several sellers reported.

In Oklahoma the price for 58-60 U. S. Motor was 2.75 cents and up, although occasional cars of that grade moved at 2.625 cents. Naphtha demand was brisk, several refiners reported, but the demand for the higher gravity gasolines was almost at a standstill.

The crude cut affected north and west Texas prices only slightly. The price range was slightly under that in Oklahoma, but this was due as much to the freight differential as to the crude situation.

Louisiana and Arkansas refiners reported a fair demand for gasoline at unchanged price levels, while Kansas refiners also indicated their shipments were good.

The natural gasoline market received considerable help late in the week when an export order for stabilized natural gasoline was placed. The material was to be of 15-pound vapor pressure, and was to be at a Gulf port within the next 30 days.

Several manufacturers shared in the business. Reports indicated the price would net the manufacturers around 1.8 cents a gallon.

As far as could be checked the total order was for between 2,500,000 and 3,000,000 gallons.

This export order gave at least two manufacturers an opportunity to enter the domestic market to supply their regular accounts. The result was a slightly better market late in the week. Quotations were 0.125 to 0.25 cent higher May 29, and even higher for June.

Demand for the stabilized natural gasoline continued brisk, several manufacturers reported. Quotations generally were from 0.25 to 0.375 cent above those for the ordinary grades.

Kansas refiners reported a brisk demand for kerosine as the harvesting season approached. Oklahoma refiners said they had noted little change in demand for the oil, and that in a few instances they had encountered some competition from east Texas at lower prices than they had quoted.

East Texas refiners were asking from 2 to 2.125 cents a gallon for their oil, according to reports here May 29. Prevailing quotations in Oklahoma for 41-43 w.w. grade were 2.375 to 2.625 cents a gallon.

Arkansas and Louisiana refiners reported kerosine demand was exceptionally brisk and the few refiners making the product were able to obtain virtually the same price for the kerosine as they were for 58-60 U. S. Motor gasoline.

Distillates and gas oils continued to lose ground slowly with demand exceedingly light. Some grades of gas oil were in fair demand, but the ordinary grades were sluggish. Some exceptionally low prices were reported from Oklahoma City on the high cold test grades, provided the buyer would contract for a certain amount.

Fuel oils continued to lose ground also, as buying failed to show any increase in volume. Prices for the lower grades were reduced soon after the cut in east Texas crude oil. The fuel oil in that district has become a problem, according to several refinery officials, and the prices placed on it for quick movement has undermined the fuel market in other districts.

No changes were noted in prices for bright stocks and the other cylinder oils. Quotations for the 150-160 vis. 210 D bright stock, regardless of cold test, ranged from 13 cents up.

Neutral oil prices also were unchanged with demand only fair, most refiners reported. Wax demand was light at prices prevailing last week.

Auto Association to Fight Federal Taxes on Gasoline and Motors

WASHINGTON, June 1

NO MORE than an intimation that treasury officers were in favor of restoring the war excise tax on motor vehicles and the imposition of a federal tax on gasoline was needed to bring notice from the American Automobile Association that any such move would bring forth a fight by it. The subject will be brought up in the national meeting of the association at West Baden, Ind., this week, according to the declaration of Thomas P. Henry, president of the association.

The treasury will have a deficit in this fiscal year of more than a billion dollars, hence this looking around by treasury officers for things to tax so that the country may pay its soldiers bonus, increased salaries for federal workers and things of that sort, including an enormous federal building bill in Washington.

"No American industry has been harder hit by the economic depression than our great motor industry," said Mr. Henry. "It seems inconceivable that any responsible official should talk at this time of restoring a war levy that would inevitably slow up the recovery of this basic industry and further jeopardize employment. The public, of course, in the final analysis, would pay the tax which would simply strengthen the present negative psychology toward purchasing and commitments. That would surely be poor medicine for our economic ills."

No authoritative announcement has been made by any responsible member of the Hoover administration as to whether it would or would not propose additional taxes. But in the discussion of the necessity for more money to meet the huge appropriations made by Congress this, that and the other thing has been discussed as a possible way out, including the restoration of the motor vehicle excise tax.

A tax on gasoline for the benefit of the federal government, if ever proposed or suggested, has not been prominent in the discussions.

"Any move to restore the war excise tax on any ground whatever would be an economic, social and political blunder" added Mr. Henry.

"Equally unsound is the suggestion for a federal tax on gasoline—unless of course, the government stands ready to recommend a tax on every instrumentality of transportation and communication, steam and electric railways, telephones, telegraph and electric current."

Chicago Tank Car Market

CHICAGO, May 29

GASOLINE buying was heavier in the Chicago market the past week due largely to the two-day holiday over the week-end. Spot gasoline prices, however, were 0.125 cent lower. Sales of U. S. Motor were reported at 2.625 to 3 cents, with most sellers asking 2.75 cents. High gravity gasolines were inactive. Naphthas were in good demand and continued to sell as high as U. S. Motor. Kerosine was quiet. Distillate, gas and fuel oils were inactive.

Following prices represent majority of sales made on Group 3 freight basis, although shipments may originate in other refining districts, such as North and West Texas, Louisiana, Arkansas, Indiana, Illinois, Kentucky, etc.

	Prices June 1	Prices May 25	Prices May 18
50-52, 437 e.p. naphtha	2.75 – 3.00	2.875– 3.00	2.875– 3.00
58-60 U. S. Motor, 437 e.p.	2.625– 3.00	2.75 – 3.25	2.75 – 3.25
†56-62 400-437 e.p. anti-knock gasoline	3.125– 4.00	3.125– 4.00	3.125– 4.00
60-62 437 e.p. gasoline	2.75 – 3.125	2.875– 3.375	2.875– 3.375
60-62 400 e.p. gasoline	2.875– 3.25	3.00 – 3.50	3.00 – 3.50
64-66 375 e.p. gasoline	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
68-70 350-360 e.p. gasoline	3.75 – 4.00	3.75 – 4.00	3.75 – 4.00
*Domestic Aviation Gasoline	5.25 – 5.50	5.25 – 5.50	5.25 – 5.75
41-43 w.w. kerosine	2.375– 2.625	2.375– 2.625	2.375– 2.625
42-44 w.w. kerosine	2.50 – 2.75	2.50 – 2.75	2.50 – 2.875
38-40 p. w. distillate	1.75 – 1.875	1.75 – 1.875	1.75 – 2.00
38-40 straw distillate	1.625– 1.875	1.625– 1.875	1.625– 1.875
32-36 ordinary dark gas oil	0.75 – 1.125	0.75 – 1.125	0.875– 1.125
32-36 dark zero gas oil	1.375– 1.50	1.375– 1.50	1.375– 1.625
32-36 straw zero gas oil	1.375– 1.625	1.375– 1.625	1.50 – 1.75
28-30 zero fuel oil (per bbl.)	$0.60 –$0.65	$0.60 –$0.675	$0.60 –$0.675
28-30 fuel oil (per bbl.)	$0.60 –$0.65	$0.60 –$0.65	$0.60 –$0.65
24-26 fuel oil (per bbl.)	$0.425–$0.475	$0.425–$0.475	$0.425–$0.475
18-22 fuel oil, low sulfur (per bbl.)	$0.325–$0.35	$0.325–$0.35	$0.35 –$0.375
18-22 fuel oil, high sulfur zero (per bbl.)	$0.325–$0.375	$0.325–$0.375	$0.35 –$0.375
14-16 fuel oil (per bbl.)	$0.30 –$0.35	$0.30 –$0.35	$0.30 –$0.35

*Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% recovery at 221°; 90% at 311°; 96% at 347°; end point 374° F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

†Over 45% benzol equivalent. Prices represent quotations and sales.

New Stations Building

Note: Material used in this column is taken principally from newspapers. NATIONAL PETROLEUM NEWS assumes no responsibility for its accuracy. Headquarters of companies and addresses of individuals are given wherever possible.

The list as published from week to week cannot be looked upon as indicative of the relative extent to which stations are being built in various parts of the country.

Service Stations

East Manchester, Ky.—Standard Oil Co. of Kentucky, Louisville, Ky.

Marquette, Mich.—W. J. Des Jardins.

Marshalltown, Ia.—Harry Henderson, 104 N. 1st St.

Perham, Minn.—Baehr Oil Co.

Huron, S. D.—Bert E. Mower.

Long Prairie, Minn.—Baehr Oil Co.

Montevideo, Minn.—Kermit J. Nokleby.

Montevideo, Minn.—Standard Oil Co. of Indiana, 910 S. Michigan Ave., Chicago, Ill.

Hatton, N. D.—Hatton Co-operative Oil Co.

Aitkin, Minn.—Northern Service Co.

Oskaloosa, Ia.—Mr. Criss.

Omaha, Neb.—J. J. Donaue, 2813 S. 33 St.

Bird Island, Minn.—Edward Bauman.

Minneapolis, Minn.—P. B. Thorgrimson, 2235 Riverside Ave.

Minneapolis, Minn.—Bernard Kubarski, 1007-09 2nd St., N. E.

Minneapolis, Minn.—Webb Oil Co., 35 Plymouth Ave., N.

Tomahawk, Wis.—R. O. Whipple.

Boswell, Ind.—McCall & Pontious.

Centralia, Ill. — Phillips Petroleum Corp., Phillips Bldg., Bartlesville, Okla.

Hancock, Wis. — L. F. Kelley and R. E. Caves.

Cromwell, Minn.—G. Hallett, Cloquet.

Foley, Minn.—Shell Petroleum Corp., Shell Bldg., St. Louis, Mo.

Oskaloosa, Ia.—Continental Oil Co., Ponca City, Okla.

Waverly, Ia.—Sinclair Refining Co., Conway Bldg., Chicago, Ill.

Waverly, Ia. — Continental Oil Co., Ponca City, Okla.

Williston, N. D.—William Monroe.

Dyersville, Ia.—J. H. Tegeler.

Brady, Tex. — Maxwell & Morrow, Sixth and Blackburn Sts.

Foley, Minn.—Emit Parent.

Baxter, Ia.—Phillips Oil Co., Chelsea, Okla.

Fergus Falls, Minn.—M. J. Isaacson.

Menomonie, Wis.—Cities Service Co., 60 Wall St., New York, N. Y.

Castlewood, S. D.—J. A. Mueller.

Duluth, Minn.—Crescent Oil Co., 1018 S. 2nd St., Minneapolis, Minn.

Red Wing, Minn.—White Eagle Oil Corp., Kansas City, Mo.

North Bend, Neb.—A. F. Verba.

Hawley, Minn.—Chris Hagelund.

Grant, Neb.—Grant Co-operative Oil Co.

Hatton, N. D.—The Texas Co., Chrysler Bldg., 135 E. 42nd St., New York, N. Y.

La Crosse, Wis.—Keizer Service Station.

Shenandoah, Ia.—Mona Motor Oil Co.

Missouri Valley, Ia.—H. T. Faith.

Northwood, Ia.—Emil Lau.

Flora, Ill.—Luke M. Creekman.

White Pigeon, Mich.—Dennis Kane.

Tuscola, Ill.—Lincoln Oil Refining Co., Robinson, Ill.

Peoria, Ill.—Sweney Gasoline & Oil Co.

Akron, Ind.—John Davis.

Slinger, Wis. — Ekerdt-Kroeber Oil Co., Hartford, Wis.

West Bend, Wis.—Carl Hahn, Fourth Ave.

Abingdon, Ill.—Kennedy Oil Co.

Noblesville, Ind. — Meara Brothers Garage.

Battle Creek, Mich.—George T. Kaastra and William Oppenhuiser, Grand Rapids, Mich.

Mauston, Wis.—J. C. Kindle.

Fairmount, Ind.—Lee Drawhon.

Toulon, Ill.—Theodore Bradford.

Buchanan, Mich.—Jerry Bowman.

Two Rivers, Wis.—Standard Oil Co. of Indiana, 910 S. Michigan Ave., Chicago, Ill.

Belleville, Ill.—Herman G. Wangelin, Inc.

Bayside, L. I.—Edward L. Kelly.

Scarsdale, N. Y. — Crane-Berkeley Corp.

New London, Conn.—Simon Green, Truman and Blinman Sts.

Chambersburg, Pa.—F. A. Sullivan.

Fostoria, O.—Standard Oil Co. of Ohio, Midland Bank Bldg., Cleveland, O.

Lafayette, Ind.—Joe Ardapple, 14th and Hartford Sts.

Walkerton, Ind.—Father John Kubacki.

Lewisburg, Tenn. — J. D. Hutton, Shelbyville, Tenn.

Bulk Stations

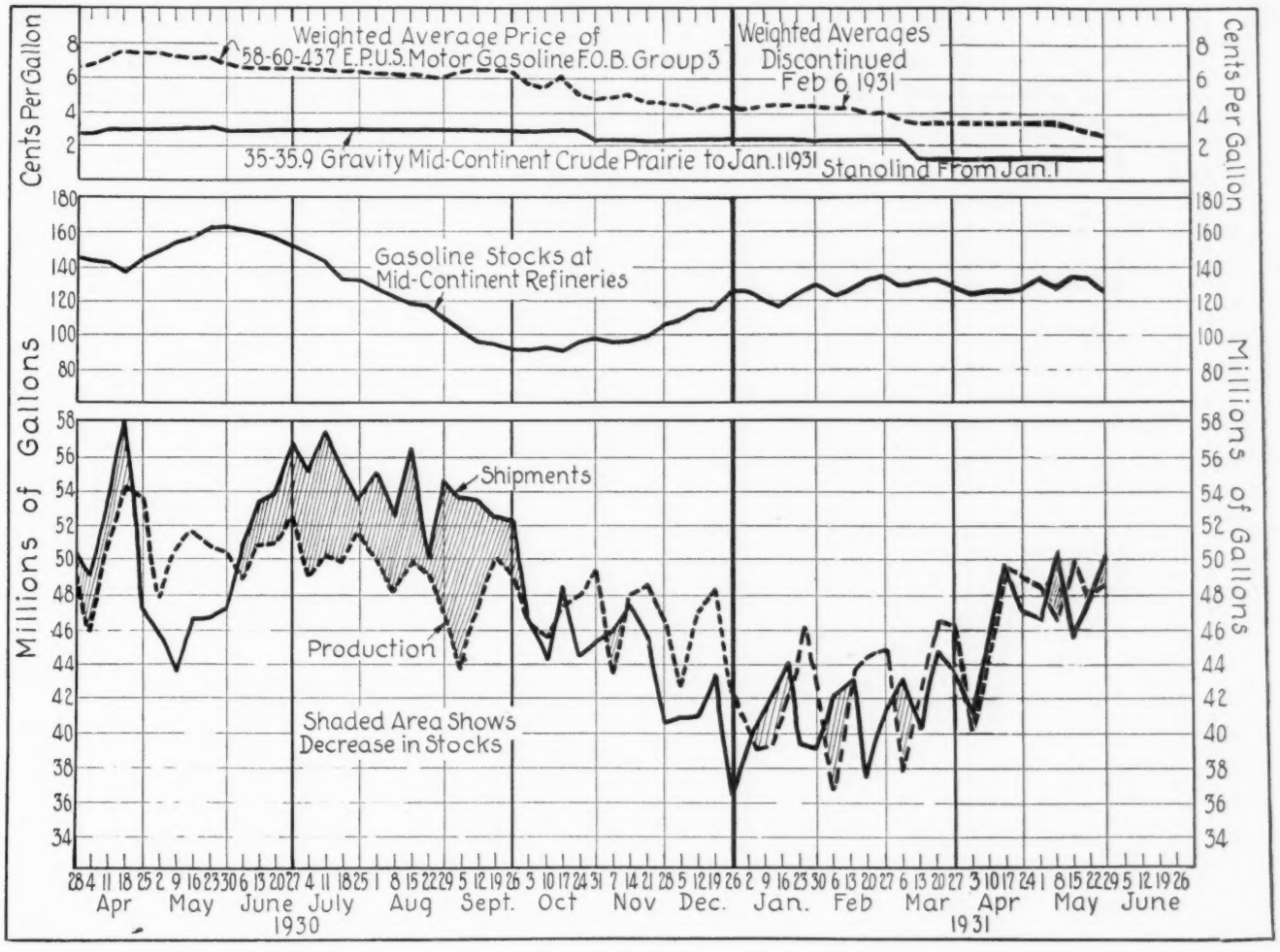
Slacktown, W. Va. — Gulf Refining Co., Frick Bldg. Annex, Pittsburgh, Pa.

Bloomer, Wis.—Farmers' Union.

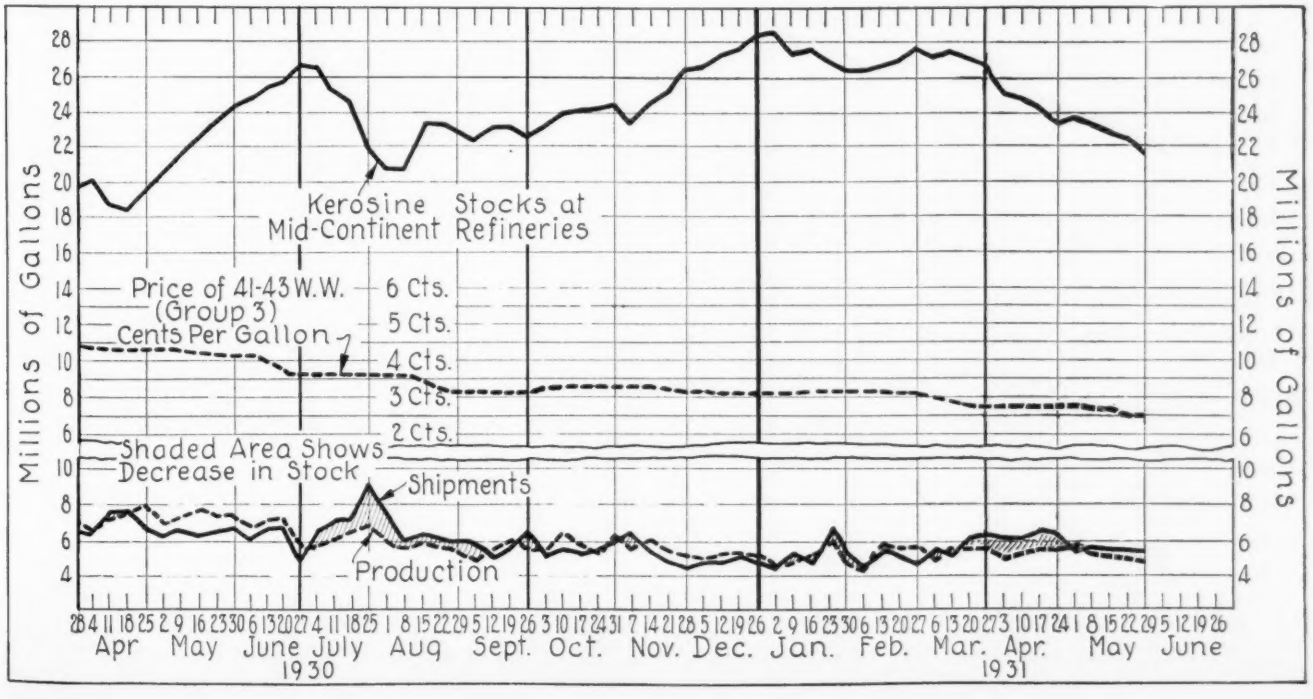
Watseka, Ill.—Iroquois Service Co.

Barometer of Mid-Continent Refinery Market—Week Ending May 29

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News


Cents Per Gallon
Weighted Average Price of 58-60-437 E.P.U.S. Motor Gasoline F.O.B. Group 3
Weighted Averages Discontinued Feb 6 1931
35-35.9 Gravity Mid-Continent Crude Prairie to Jan. 1 1931
Stanolind From Jan. 1
Gasoline Stocks at Mid-Continent Refineries
Millions of Gallons
Shipments
Production
Shaded Area Shows Decrease in Stocks
Apr May June July Aug Sept. Oct Nov Dec. Jan. Feb Mar Apr May June
1930
1931

Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date as shown in the table on page 74



Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, except where $ is shown in tank car lots, f.o.b. Refinery. They represent prices made only to domestic jobbers who resell to the consuming public, except where otherwise noted.

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices June 1	Prices May 25	Prices May 18
48-50 450 e.p. naphtha...	2.75 – 2.875	2.75 – 2.875	2.75 – 2.875
50-52 450 e.p. naphtha...	2.75 – 2.875	2.75 – 2.875	2.75 – 2.875
56-58 450 e.p. gasoline...	2.75 – 2.875	2.75 – 2.875	2.75 – 2.875
58-60 450 e.p. gasoline...	2.75 – 2.875	2.75 – 2.875	2.75 – 2.875
58-60 U.S. Motor 437 e.p.	2.75 – 3.00	2.75 – 3.25	2.875– 3.25
60-62 437 e.p. gasoline...	2.75 – 3.25	2.75 – 3.25	3.00 – 3.375
60-62 400 e.p. gasoline...	2.875– 3.375	3.00 – 3.50	3.125– 3.50
64-66 390 e.p. gasoline...	3.375– 3.625	3.375– 3.625	3.50 – 3.75
64-66 375 e.p. gasoline...	3.50 – 3.875	3.50 – 3.875	3.625– 4.00
68-70 350-360 e.p. gasoline	3.875– 4.125	3.875– 4.125	3.875– 4.125
‡Domestic Aviation Gasoline.....	4.75 – 5.00	5.00 – 5.25	5.00 – 5.25

‡Prices based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% rec. at 221°; 90% at 311°; 96% at 347°; end point, 374°F. Fighting grade in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

52-54 Naphtha.....	4.75 – 5.00	5.00	5.00 – 5.25
54-56 Naphtha.....	4.75 – 5.00	5.00	5.00 – 5.25
58-60 U.S. Motor 437 e.p.	4.875– 5.25	5.00 – 5.25	5.00 – 5.25
60-62 400-410 e.p. gasoline	5.125– 5.375	5.125– 5.375	5.125– 5.50
64-66 390 e.p. gasoline...	5.25 – 5.50	5.25 – 5.50	5.375– 5.75
68-70 350-360 e.p.....	6.00 – 6.25	6.00 – 6.25	6.00 – 6.50

OHIO (Quotations of S. O. Ohio. 4c state tax to be added.)

U. S. Motor Gasoline

Ohio, delivery at any point.....	8.00	8.00	8.00

KANSAS (F. o. b. refinery Kansas destination)

58-60 U.S. Motor 437 e.p.	3.25 – 3.50	3.375– 3.625	3.50 – 3.75
60-62 437 e.p. gasoline...	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
60-62 400 e.p. gasoline...	3.625– 3.875	3.625– 3.875	3.625– 3.875
64-66 375 e.p. gasoline...	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25

NORTH TEXAS (F. o. b. North Texas refineries)

56-58 450 e.p. gasoline...	2.625	2.625	2.625
58-60 450 e.p. gasoline...	2.625	2.625	2.625
58-60 U.S. Motor 437 e.p.	2.625– 2.875	2.75 – 3.125	2.875– 3.125
60-62 400 e.p. gasoline...	2.75 – 3.00	3.00 – 3.25	3.00 – 3.25
64-66 390 e.p. gasoline...	3.125– 3.50	3.375– 3.625	3.375– 3.625
64-66 375 e.p. gasoline...	3.375– 3.625	3.50 – 3.75	3.75
68-70 350-360 e.p. gasoline	3.75 – 4.00	3.875– 4.00	4.00

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment)

50-52 naphtha.....	2.50	2.50	2.50
58-60 437 e.p. gasoline...	2.50 – 2.625	2.625	2.625
58-60 U.S. Motor 437 e.p.	2.625– 2.875	2.75 – 3.125	2.875– 3.125

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

58-60 U.S. Motor 437 e.p.	3.25	3.50	3.50

ARKANSAS (Ark., N. La. and Miss. destination)

58-60 U.S. Motor 437 e.p.	3.25	3.25 – 3.50	3.50

CALIFORNIA (3c tax to be added to California gasoline prices if used in state.)

54-58 U.S. Motor 437 e.p.	3.25 – 3.50	3.25 – 3.50	3.00 – 3.75
54-58 U.S. Motor, for outside state shipment....	3.25 – 3.75	3.25 – 3.75	3.25 – 4.00
58-61 375-400 e.p. gasoline	3.75 – 4.75	3.75 – 4.75	3.75 – 4.75
42-45 Engine Distillate 445-480 e.p.....	3.00 – 3.50	3.00 – 3.50	3.00 – 3.50

NATURAL GASOLINE

(Note: End point of all grades, not over 375F. Corrosion test adopted Oct. 1, 1927; A.S.T.M. Method D130-27T; doctor test, July 2, 1928.)

OKLAHOMA (F. o. b. Oklahoma refineries)

Grade AA, 80-87.9, 90% Recovery.....	1.75	1.625– 1.75	**1.50 –1.625
Grade A, 72-79.9, 90% Recovery.....	1.875– 2.00	1.875– 2.00	1.875 –2.00
Grade BB, 84-92, 85% Recovery.....	1.50 – 1.625	1.50	1.50
Grade B, 76-83.9, 85% Recovery.....	1.50 – 1.625	1.50	1.50
Grade C, 80-92, 78% Recovery.....	1.50 – 1.625	1.50	1.50

NORTH TEXAS (F. o. b. Breckenridge)

	Prices June 1	Prices May 25	Prices May 18
Grade AA, 80-87.9, 90% Recovery.....	1.75	1.625– 1.75	**1.50 – 1.625
Grade A, 72-79.9, 90% Recovery.....	1.875– 2.00	1.875– 2.00	1.875– 2.00
Grade BB, 84-92, 85% Recovery.....	1.50 – 1.625	1.50	1.50
Grade B, 76-83.9, 85% Recovery.....	1.50 – 1.625	1.50	1.50
Grade C, 80-92, 78% Recovery.....	1.50 – 1.625	1.50	1.50

NORTH LOUISIANA (F. o. b. Monroe District)

Grade AA.....	†1.875	†1.875	†1.875
Grade BB.....	†1.75	†1.625	†1.625
Grade C.....	†1.75	†1.625	†1.625

CALIFORNIA (F. o. b. California refineries)

75-85, 375-390 e.p. for blending.....	3.00 – 3.50	2.25 – 2.75	2.50 – 3.00

BURNING OILS

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

45 w.w. kerosine.....	4.00 – 4.25	4.00 – 4.25	4.125– 4.375
46 w.w. kerosine.....	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50
47 w.w. kerosine.....	4.50 – 4.75	4.50 – 4.75	4.50 – 4.75

OKLAHOMA (F. o. b. Oklahoma refineries)

41-43 w.w. kerosine.....	2.375– 2.625	2.375– 2.625	2.50 – 2.75
42-44 w.w. kerosine.....	2.50 – 2.75	2.50 – 2.75	2.625– 2.875

KANSAS (F. o. b. refinery Kansas destination)

41-43 w.w. kerosine.....	2.875– 3.00	2.875– 3.125	2.875– 3.125
42-44 w.w. kerosine.....	3.00 – 3.125	3.00 – 3.25	3.00 – 3.25

NORTH TEXAS (F. o. b. North Texas refineries)

40-42 w.w. kerosine.....	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
41-43 w.w. kerosine.....	2.375– 2.625	2.375– 2.625	2.375– 2.625

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

41-43 w.w. kerosine.....	3.00	3.00 – 3.25	3.25 – 3.50

ARKANSAS (Ark., N. La. and Miss. destination)

41-43 w.w. kerosine.....	3.00	3.00 – 3.25	3.25 – 3.50

CALIFORNIA (F. o. b. California refineries)

38-40 w.w. kerosine.....	3.75 – 4.25	3.75 – 4.50	4.00 – 4.75

NEUTRAL OIL

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

Vis.	(Viscosity at 70° F.)		
200 No. 3 color, 420-425 flash.....	21.00 –21.50	21.00 –21.50	21.00 –21.50
180 No. 3 color, 410-415 flash.....	18.00 –19.00	18.00 –19.00	18.00 –19.00
150 No. 3 color, 400-405 flash.....	15.75 –16.00	15.75 –16.00	16.00 –17.00

****MID-CONTINENT** (F. o. b. Mid-Continent refineries)

Vis. Color	(Viscosity at 100° F.)		
100—No. 2.....	5.25	5.25	5.25
150—No. 3.....	6.25 – 6.75	6.25 – 6.75	6.25 – 6.75
150—No. 4.....	6.50	6.50	6.50
180—No. 3.....	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
180—No. 4.....	7.75 – 8.00	7.75 – 8.00	7.75 – 8.00
180—No. 5.....	7.50	7.50	7.50
200—No. 3.....	8.75 – 9.50	8.75 – 9.50	8.75 – 9.50
200—No. 4.....	8.50	8.50	8.50
200—No. 5.....	8.25	8.25	8.25
220—No. 3.....	10.00	10.00	10.00
220—No. 4.....	9.50	9.50	9.50
220—No. 5.....	9.00	9.00	9.00
240—No. 3.....	11.00	11.00	11.00
240—No. 4.....	10.00	10.00	10.00
240—No. 5.....	9.50	9.50	9.50
280—No. 3.....	12.50	12.50	12.50
280—No. 4.....	11.50	11.50	11.50
280—No. 5.....	11.00	11.00	11.00

Note: Quotations for 0 to 10 cold test neutral oils are 1 to 2 cents higher depending on the grade.

†Prices nominal ††Only one refiner quoting *Quotations only

****Prices represent Quotations and Sales.**

Refinery Markets Wax, Lubricants, Heavy Oil

Prices given below are in cents per gallon, except where $ is shown in tank car lots, f.o.b. Refinery. They represent prices made only to domestic jobbers who resell to the consuming public, except where otherwise noted.

(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)

GULF COASTAL (F. o. b. Gulf Coastal refineries)

Vis. Color	Prices June 1 (Viscosity at 100° F., pour test 0)	Prices May 25	Prices May 18
100—No. 2 Pale	5.00 – 5.75	5.00 – 5.75	5.00 – 5.75
200—No. 3 Pale	7.50 – 8.00	7.50 – 8.00	7.50 – 8.00
300—No. 3 Pale	8.50 – 9.00	8.50 – 9.00	8.50 – 9.00
500—No. 3½ Pale	9.50 –10.00	9.50 –10.00	9.50 –10.00
750—No. 4 Pale	11.00 –11.50	11.00 –11.50	11.00 –11.50
1200—No. 4 Pale	14.50 –15.00	14.50 –15.00	14.50 –15.00
2000—No. 4-5 Pale	15.00 –15.50	15.00 –15.50	15.00 –15.50
200—No. 5½ Red Oil	6.50 – 7.00	6.50 – 7.00	6.50 – 7.00
300—No. 5½ Red Oil	7.50 – 8.00	7.50 – 8.00	7.50 – 8.00
500—No. 6 Red Oil	8.50 – 9.00	8.50 – 9.00	8.50 – 9.00
750—No. 6 Red Oil	10.50 –11.00	10.50 –11.00	10.50 –11.00
1200—No. 5-6 Red Oil	13.50 –14.00	13.50 –14.00	13.50 –14.00
2000—No. 6 Plus Red Oil	14.50 –15.00	14.50 –15.00	14.50 –15.00

‡CALIFORNIA (F. o. b. California refineries)

Vis. Color	(Viscosity at 100° F.)		
100—No. 3	7.00	7.00	7.00
200—No. 3	10.00	10.00	10.00
300—No. 3	10.50	10.50	10.50
450—No. 3	12.50	12.50	12.50
550—No. 3	13.50	13.50	13.50
600—No. 3	13.50	13.50	13.50
200—No. 5	10.00	10.00	10.00
300—No. 5	10.50	10.50	10.50
400—No. 5	12.00	12.00	12.00
500—No. 5	13.00	13.00	13.00
600—No. 5	13.50	13.50	13.50
700—No. 7	15.50	15.50	15.50

‡Above prices in effect since April 1.

CYLINDER STOCKS

MID-CONTINENT (F. o. b. Mid-Continent refineries)

(Cylinder stock prices represent quotations and sales to domestic jobbers only).

190-200 Vis. D at 210° Brt. St.	18.00	18.00	18.00
150-160 Vis. D at 210° Brt. St., 0-10 cold test	13.00 –15.00	13.00 –15.00	13.50 –15.00
150-160 Vis. D at 210° Brt. St., 10-25 cold test	13.00 –14.50	13.00 –14.50	13.50 –14.50
150-160 Vis. D Brt. Stock, 25-40 cold test	13.00 –14.00	13.00 –14.00	13.50 –14.00
150-160 Vis. E 210° Brt. St.	13.00 –14.00	13.00 –14.00	13.00 –14.00
600 St. Ref. Olive Green	6.00 – 7.50	6.00 – 7.50	6.00 – 7.50
600 St. Ref. Dark Green	4.50 – 5.50	4.50 – 5.50	4.50 – 5.50
Black Oil	4.00 – 5.00	4.00 – 5.00	4.00 – 5.00

PENNSYLVANIA (F. o. b. Western Penna. refineries) (A.S.T.M. Tests)

600 Steam Refined, filterable	7.50 – 8.00	7.75 – 8.00	7.75 – 8.00
650 Steam Refined	10.75 –11.25	10.75 –11.25	10.75 –11.25
600 Flash	11.50 –12.50	11.50 –12.50	11.75 –12.50
630 Flash	17.00 –18.00	17.00 –18.00	17.00 –18.00
600 Warren E	11.75 –12.00	11.75 –12.00	11.75 –12.25
Cold Test Stocks, 140-150 vis. at 210°, 540-550 flash, No. 8 color, 20 pour test and below	17.00 –17.50	17.00 –17.50	17.50 –18.00
No. 8 color, 25 and 35 pour test	16.50 –17.00	17.00 –17.50	17.00 –17.50
No. 8 color, 40 pour test and above	16.00 –17.00	16.75 –17.00	17.00 –17.50

WAX

PENNSYLVANIA (Per pound, F. o. b. New York)

122-124 white crude scale a.m.p.	2.00	2.00 – 2.125	2.125
124-126 white crude scale, a.m.p.	2.00	2.00 – 2.125	2.125

****OKLAHOMA** (Per pound in barrels; in a few instances, per pound in burlap bags; F. o. b. Oklahoma refineries.)

124-126 White Crude Scale, a.m.p.	1.75 – 2.00	1.75 – 2.00	1.75 – 2.00

DISTILLATE, GAS AND FUEL OIL

PENNSYLVANIA (For outside Pittsburgh district)

36-40 fuel oil	2.50 – 2.75	2.50 – 2.75	2.75 – 2.875
30-34 fuel oil	2.50 – 2.75	2.50 – 2.75	2.75 – 2.875
28-32 fuel oil	2.50 – 2.75	2.50 – 2.75	2.75 – 2.875

†Prices nominal ††Only one refiner quoting *Quotations only

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices June 1	Prices May 25	Prices May 18
38-40 straw distillate	1.75 – 2.00	1.75 – 2.00	1.75 – 2.125
36-38 straw distillate	1.625– 1.875	1.625– 1.875	1.625– 1.875
32-36 straw gas oil	1.25 – 1.50	1.25 – 1.50	1.25 – 1.50
32-36 straw gas oil zero	1.50 – 1.75	1.50 – 1.75	1.625– 1.875
32-36 dark gas oil	1.00 – 1.375	1.00 – 1.375	1.00 – 1.375
32-36 dark gas oil zero	1.375 –1.625	1.50 – 1.75	1.50 – 1.75
28-30 zero fuel oil(per bbl.)	$0.625–$0.675	$0.625–$0.675	$0.65 –$0.70
28-30 fuel oil (per bbl.)	$0.60 –$0.65	$0.60 –$0.65	$0.625–$0.675
26-28 fuel oil (per bbl.)	$0.475–$0.525	$0.475–$0.525	$0.525–$0.575
24-26 fuel oil (per bbl.)	$0.45 –$0.50	$0.45 –$0.50	$0.45 –$0.50
22-26 fuel oil (per bbl.)	$0.425–$0.475	$0.425–$0.475	$0.45 –$0.50
18-22 fuel oil (per bbl.)	$0.35 –$0.40	$0.35 –$0.40	$0.35 –$0.40
16-20 fuel oil (per bbl.)	$0.325–$0.375	$0.325–$0.375	$0.35 –$0.40
14-16 fuel oil (per bbl.)	$0.275–$0.325	$0.275–$0.325	$0.325–$0.35

KANSAS (F. o. b. refinery Kansas destination)

38-40 straw distillate	2.25 – 2.50	2.25 – 2.50	2.25 – 2.50
36-38 straw distillate	2.125– 2.25	2.125– 2.25	2.125– 2.25
32-36 straw gas oil	1.75 – 2.00	2.00 – 2.25	2.00 – 2.25
18-22 fuel oil (per bbl.)	$0.45 –$0.55	$0.475–$0.575	$0.475–$0.575
10-14 fuel oil (per bbl.)	$0.35 –$0.375	$0.35 –$0.40	$0.35 –$0.40

NORTH TEXAS (F. o. b. North Texas refineries)

38-40 straw distillate	1.75 – 2.00	1.75 – 2.00	1.75 – 2.00
38-40 p.w.treated distillate	1.875– 2.125	1.875– 2.125	1.875– 2.125
32-36 gas oil, cracked	1.00 – 1.375	1.00 – 1.375	1.25 – 1.50
32-36 St. reduced gas oil	0.875– 1.25	0.875– 1.25	1.00 – 1.375
24-26 fuel oil (per bbl.)	$0.35 –$0.40	$0.375–$0.425	$0.375–$0.425
20-24 fuel oil (per bbl.)	$0.30 –$0.35	$0.325–$0.375	$0.325–$0.375
18-22 fuel oil (per bbl.)	$0.275–$0.325	$0.30 –$0.35	$0.30 –$0.35

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment.

34-38 gas oil	1.625– 1.75	1.625– 1.75	1.625– 1.75
30-32 gas oil	1.00 – 1.25	1.00 – 1.25	1.00 – 1.25
28-30 zero gas oil	1.375– 1.625	1.375– 1.625	1.375– 1.625
18-22 fuel oil (per bbl.)	$0.375–$0.40	$0.375–$0.40	$0.375–$0.40

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

32-36 gas oil, dark	2.00 – 2.25	2.00 – 2.25	2.25 – 2.50
32-36 gas oil, straw	2.00 – 2.25	2.00 – 2.25	2.25 – 2.50
14-16 fuel oil (per bbl.)	$0.55 –$0.65	$0.55 –$0.65	$0.55 –$0.65

ARKANSAS (Ark., N. La. and Miss. destination)

32-36 gas oil, straw	2.00 – 2.25	2.00 – 2.25	2.25 – 2.375
32-36 dark gas oil	2.00 – 2.25	2.00 – 2.25	2.25 – 2.375
28-30 gas oil	2.00 – 2.125	2.00 – 2.125	2.125– 2.25
20-24 fuel oil (per bbl.)	$0.75	$0.75	$0.75
9-12 fuel oil (per bbl.)	$0.525–$0.575	$0.525–$0.575	$0.525–$0.575
Black oil	3.00 – 3.25	3.00 – 3.25	3.00 – 3.25

CALIFORNIA (F. o. b. San Joaquin Valley. Nominal pipe line charge to San Francisco 24c per bbl. more and to San Pedro 20c per bbl. more.)

14-18 fuel oil (per bbl.)	$0.45 –$0.55	$0.45 –$0.55	$0.45 –$0.55
14-18 Bunker oil (per bbl.)	$0.55 –$0.80	$0.55 –$0.80	$0.55 –$0.80
30-34 gas oil (per bbl.)	$0.70 –$0.85	$0.70 –$0.85	$0.70 –$0.85
27 Plus Diesel oil (per bbl.)	$0.70 –$0.85	$0.70 –$0.85	$0.65 –$0.80

PETROLATUMS

PENNSYLVANIA (Per pound, in barrels, carload lots, f. o. b. Penna refinery. In tank cars 5/8c to 3/4c per pound less.) Two refiners quoting.

Snow White	6.50 – 7.25	6.50 – 7.25	6.50 – 7.25
Lily White	5.125– 6.00	5.125– 6.00	5.125– 6.00
Cream White	4.125– 5.00	4.125– 5.00	4.125– 5.00
Light Amber	2.625– 3.00	2.625– 3.00	2.625– 3.00
Amber	2.375– 2.75	2.375– 2.75	2.375– 2.75
Red	1.875– 2.50	1.875– 2.50	1.875– 2.50

PETROLEUM COKE

****OKLAHOMA** (F. o. b. Oklahoma refineries)

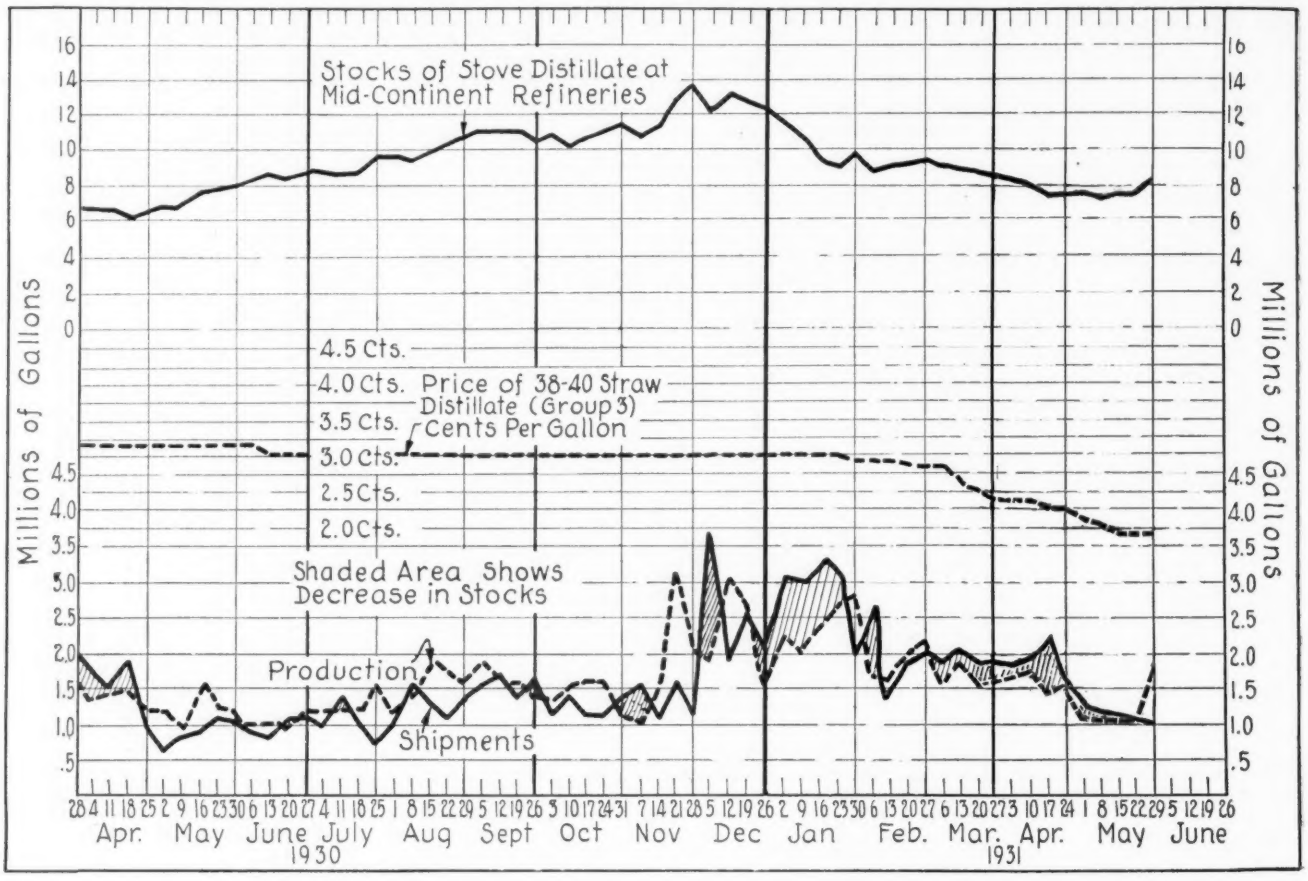
(Per ton in car lots)

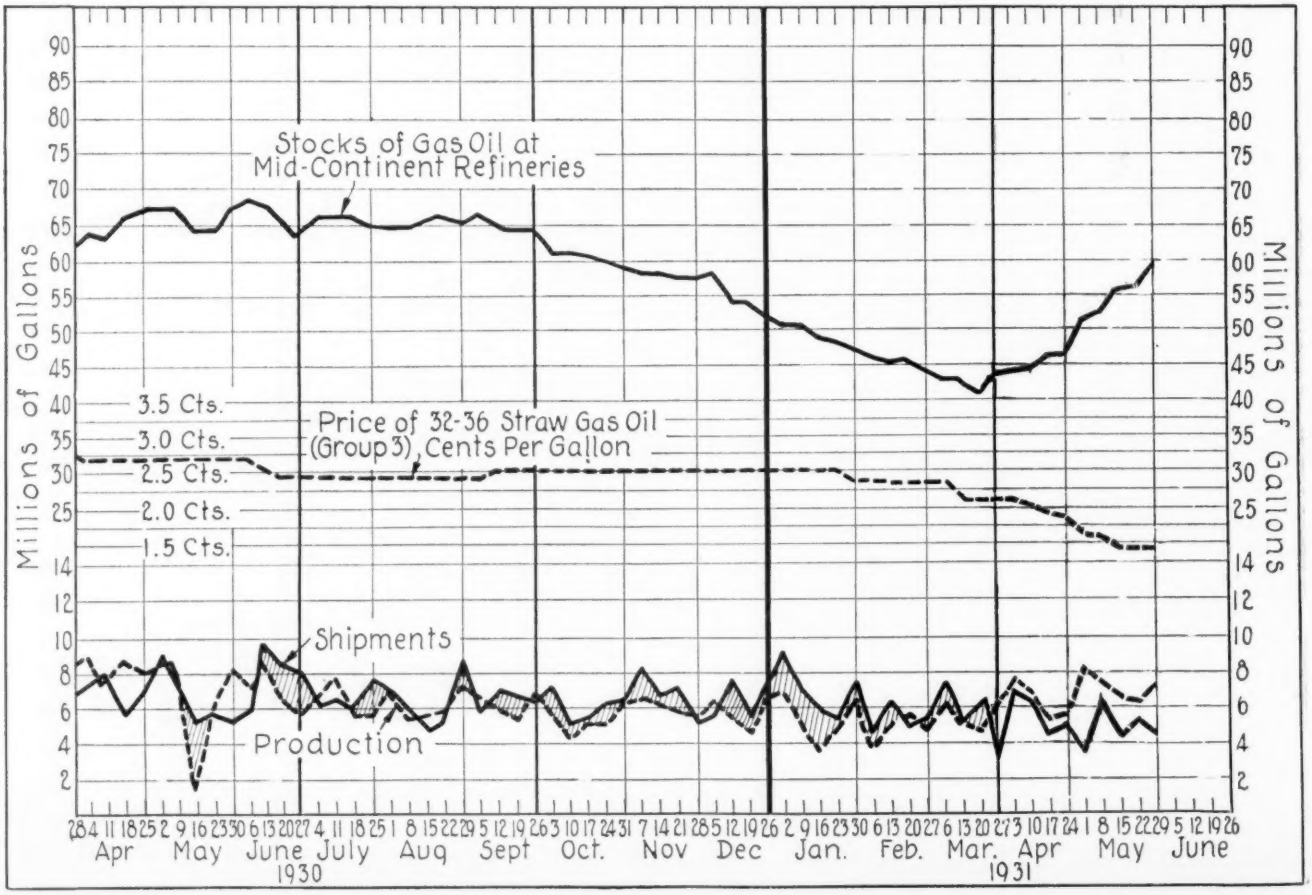
Lump	$3.00	$3.00	$3.00
Still run	$2.00	$2.00	$2.00
Breeze	$1.25	$1.25	$1.25

****Prices represent Quotations and Sales**

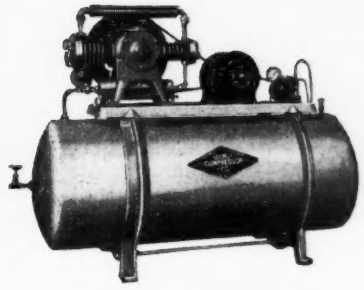
Barometer of Mid-Continent Refinery Market—Week Ending May 29

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News



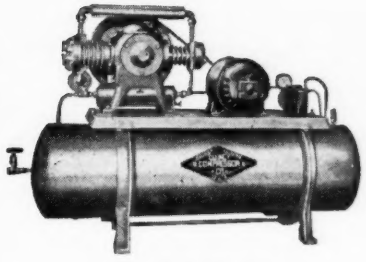


QUINCY Compressors FOR GENUINE ECONOMY



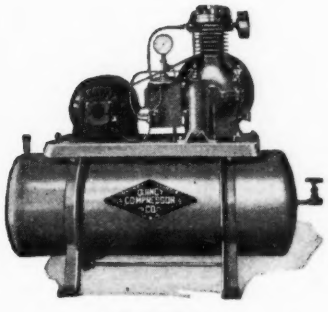
Model G-18

Particularly suited to automotive use. Two-Stage, air cooled. Automatic. 3¾ to 7⅓ cu. ft. displacement. 175 lbs. cut-out pressure. Also made portable for paint spraying.



Model G-16

An air-cooled Two-Stage compressor. Vee Belt driven. 175 lbs. cut-out pressure. Tank, 14" x 48". Displacements, 3¾ to 6 cu. ft., with ¾ to 1½ H.P. motors.



Model F-1

Complete automatic unit suitable for average Service Station or Garage. Size 2½ x 2½, air cooled. Displacements from 2.8 to 4.2 cu. ft. with ½ and ¾ H. P. motors. Cut out pressure, 150 lbs. Tank, 14" x 36".

WHETHER an Oil Jobber buys air compressors to use in his own Service Stations, to sell, or to give away, they must be economical.

That doesn't mean they must be cheap. It's "long run" economy that is most desired.

That is exactly why Oil Jobbers are such large purchasers of Quincy Compressors. They are so dependable, so low in operating and up-keep costs, so long lived!

There are Bulletins covering every type of Quincy Compressor, air cooled and water cooled, with displacements from 1 to 128 cu. ft.

Write or use the coupon below. No obligation.

QUINCY COMPRESSOR CO., 223 Maine St., Quincy, Ill.

SERVICE AND SALES

Atlanta, Ga.	Cleveland, Ohio	Kansas City, Mo.	Richmond, Va.
Birmingham, Ala.	Davenport, Iowa	Memphis, Tenn.	St. Louis, Mo.
Chicago, Ill.	Detroit, Mich.	Newark, N. J.	Syracuse, N. Y.
Cincinnati, Ohio	Houston, Texas	New Orleans, La.	Washington, D. C.

Also in other important centers

Quincy Compressor Co.,
223 Maine St., Quincy, Ill.

Please send complete information about Quincy Compressors suitable for Service Stations and Garages.

Name .....

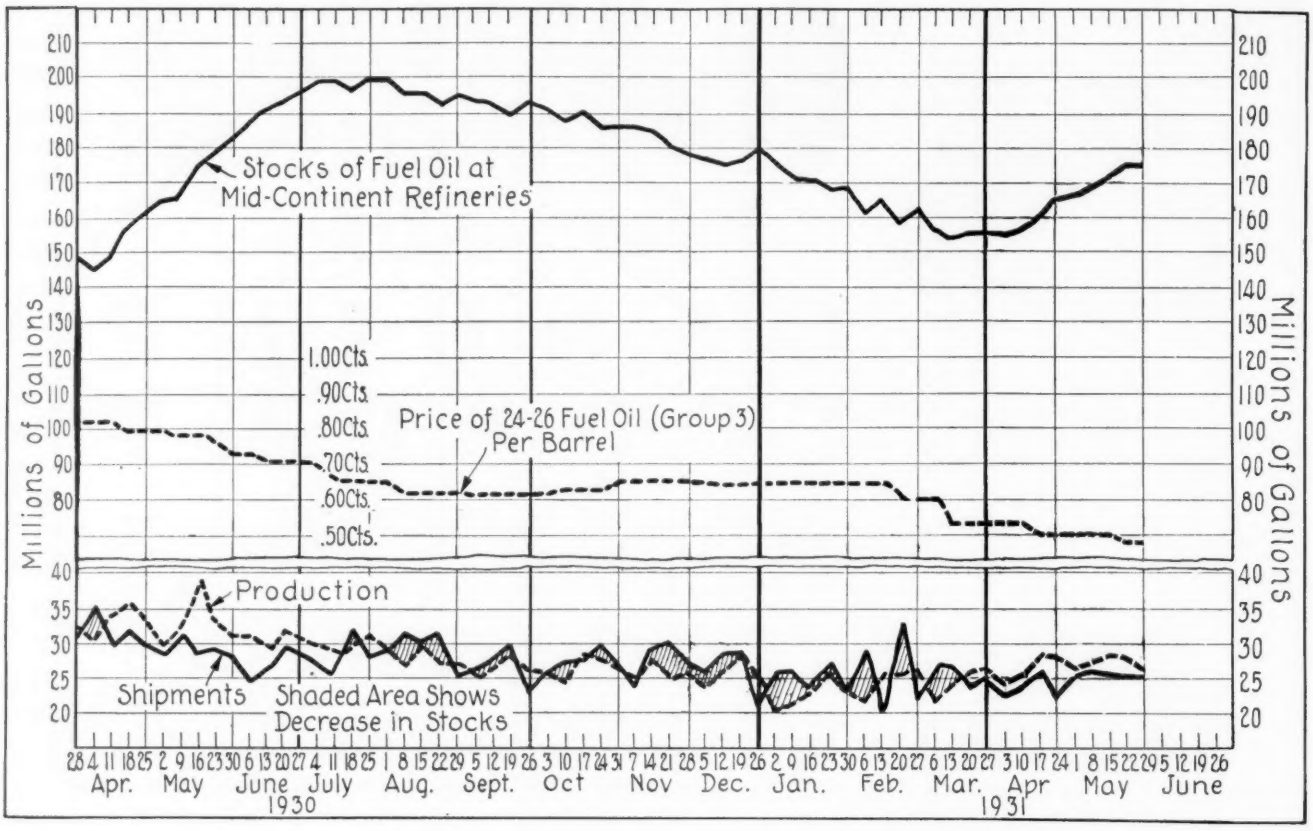
Address ..... State .....

City .....

P3

Barometer of Mid-Continent Refinery Market—Week Ending May 29

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News



California Refinery Market

Price Advances Reported to Be Impending

LOS ANGELES, May 29

PACIFIC coast markets were practically unchanged the past week. Interest centered largely around the numerous reports that crude and refined oil prices would be advanced in the very near future.

Members of the local export trade continued to report few inquiries and no sales.

It was reported three cargoes of U. S. Motor had been sold to an east coast buyer at a price between 3.75 and 4 cents, f.o.b. San Pedro harbor, but this report lacked confirmation. One boat was lifted during the past week.

An exporter said a quotation of 3.25 cents to a London buyer had failed to attract actual business. This was for U. S. motor gasoline for immediate lifting. Increased inquiry from South American buyers for cased gasoline and kerosine was reported and some interest from the India trade was noted in gas and diesel oils.

Charter rates for clean boats were thought to be in the neighborhood of $0.44 to $0.48, for movement to the east coast.

Quotations for petroleum products for domestic use changed very little from those of a week ago. Although the cause could not be determined, natural gasoline was slightly more active with spot quotations at 3 to 3.25 cents.

U. S. Motor gasoline quotations for delivery to points within the state in tank car lots, ranged from 3.25 to 3.50 cents with a few sales reported at 3 cents. The spread of prices for this commodity for use in adjoining states was 3.25 to 3.75 cents with average quotations reported at 3.50 to 3.75 cents.

With jobbers and resellers keeping their tanks full of gasoline in anticipation of a price advance, spot movement of gasoline was reported comparatively slow. It is not anticipated that in the event of a higher tank wagon schedule, the increase would be more than four or five cents, which would place the tank wagon price at about 7.50 to 8.50 cents and the retail price at 13.50 to 14.50 cents, including the tax.

Quotations for fuel oil were $0.42 to $0.55, with a majority of the sales made between $0.50 and $0.55. Demand was reported good for gas and diesel oils at prices of $0.75 to $0.90 per barrel.

New Oildraulic District Manager

MEMPHIS, Tenn.—Hugh V. Conroy, formerly with the Marquette Mfg. Co. and the Raybestos Co., has been appointed district manager of the metropolitan area of Pennsylvania and New Jersey for the Oildraulic Lift Co., Memphis.

Mr. Conroy has had long experience in automotive equipment sales, having had all parts of the United States as his territory, excepting the Pacific Coast.

Pennsylvania Markets

Trading Fairly Active

CLEVELAND, June 1.—Trading generally was described as fair to good in the western Pennsylvania refinery market last week. Prices of several commodities were slightly lower, and while demand was far from being brisk, sellers showed no disposition to complain.

Jobbing demand for gasoline was fairly heavy early in the week. Buyers in some instances were particularly anxious to get shipments rolling in time to reach them before the holiday. The supply of gasoline, however, continued to be in excess of demand and prices suffered slightly. U. S. Motor dropped 0.125 cent on the low, the market for this grade ranging from 4.875 to 5.25 cents.

Kerosine continued lifeless. Prices at the same time remained unchanged with 45 w.w. quoted mostly at 4 to 4.25 cents.

Fuel oil buying picked up materially. Both industrial buyers and refiners who were buying for cracking stock were more active in the market. An inquiry from one industrial buyer called for approximately 50 cars for prompt shipment. Less fuel oil was being offered at 2.50 cents to the car unloader as the week ended although offerings at this price still were sufficient to be a market factor.

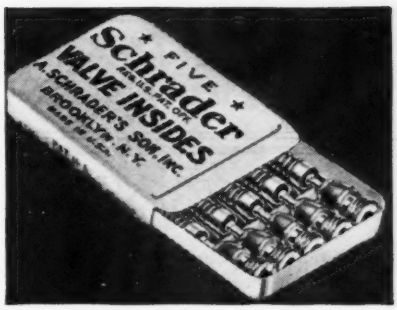
Cylinder stocks remained quiet. Distress bright stock caused the market for this commodity to recede 0.5 to 0.75 cent a gallon. Cold settled stock was offered by one seller at 16 cents in lots of from one to 20 cars.

Neutral oils were fairly steady. The 200 and 180 No. 3 color grades were relatively scarce, and while the 150 No. 3 color oil was said to be more freely available, buyers reported they were unable to get more than a car or two here and there.

Early Closing Proposed For Ohio Stations

CLEVELAND, O., May 29.—Directors of the Ohio Petroleum Marketers Association have adopted a resolution approving the earlier closing of service stations throughout Ohio. The agitation was begun in the Tri-County Petroleum Club at a meeting in Akron. It was proposed to close stations at 7 p.m. and that early closing be tried next fall and winter.

The proposal is being discussed and voted on at meetings of Ohio petroleum clubs. Early closing is expected to result in the saving of considerable operating expense.



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EVERY SERVICE STATION SHOULD HAVE THESE THREE OFTEN-NEEDED ACCESSORIES

WHY do so many cars enter gas stations with valve caps missing or with valve cores that should be replaced? Because the average motorist hates to waste time hunting for a place where such incidentals can be bought and applied. But, let him find them conveniently at hand while he is obtaining gas, oil or air, and he immediately becomes a ready customer for them—and still more appreciative of the station's thoughtful service. The following widely renowned Schrader products represent not only accommodation merchandise for service stations, but a logical and very profitable added source of revenue:

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MOTOR OILS

Buyers Specifications or Ours

Pennsylvania Quality at

Lowest Prices in Years

Write or Wire

INDUSTRIAL OIL CORP.

Warren, Pa.

Eastern Domestic Markets

Prices Steady Despite Discouraging News

Staff Special
NEW YORK, May 29

EASTERN gasoline markets concluded May with the price structure fairly steady and a tone of quiet optimism prevailing in spite of several rather discouraging events during the week ended May 29.

The reduction of crude prices in the East Texas field and conflicting reports from the Mid-Continent, which ordinarily have been received by the trade as bad news, were recently accepted calmly with little or no comment.

The Sinclair Refining Co. introduced its competitive grade of gasoline, "Sinclair Green" in and around metropolitan New York, but as yet no other company in this area has adopted the third grade policy. The marketing of "Sinclair Green," it was said, will be consistent with the policy adopted by the company in other sections of the country, that is, the retail price will be two or three cents under the posted price for the regular grade of gasoline depending upon the postings of the cut-price marketers. The third grade was reported to be ready for the motorist on Friday, May 29.

The Pure Oil Co. introduced a third grade of gasoline in Philadelphia early in the week at 13 of its service stations which are located close to price cutters. At this writing, no action has been taken by Pure to extend this policy beyond the limits of Philadelphia.

Major marketing companies in New York City who have not adopted the third grade gasoline have considered the merits of this policy but have reported that no action for the present would be taken. The opinion was entertained in some quarters that a grade of gasoline to meet low-price competition would in no way alleviate the troubles in complex eastern markets.

The wholesale market at New York harbor experienced a land-office business the past week from jobbers who were buying heavily in anticipation of Memorial Day consumption. Good motoring weather has continued and the demand from motorists has increased gallonage considerably.

Regular U. S. Motor gasoline was freely available at 5.75 cents in tank cars at New York harbor, and sales at that figure represented the greatest part of the trading. Although gasoline could be had at 5.50 cents in tank cars and in barges at 5.25 cents from a few traders, yet the sales at these figures represented only a small portion of the total transactions in the spot market.

The Philadelphia and Baltimore markets were fairly steady with U. S. Motor quoted at 5.75 cents by the principal sellers. Little price shading was reported at either point throughout the week with the exception of one marketer in Philadelphia, who was troubled by the movement of a large barge of gasoline from New York harbor at a delivered price equal to prices quoted f.o.b. Philadelphia terminals.

Pacific coast refiners have been making overtures to the eastern grade in an effort to recover some of the cargo business lost in the market shake-up of the past year. The domestic movement of cargoes in the open market has increased during the last few months. Suppliers on the West Coast have quoted prices sufficiently low to enable their material to be laid down in New York at 4.625 cents or at practically the same price that gasoline from the Gulf can be delivered in New York.

New England gasoline markets shared in the increased demand along the seaboard. The bulk of material sold was under contract; the little spot business reported was at the posted prices. Regular U. S. Motor gasoline was posted at 6.50 cents f.o.b. Portland, and 6.25 cents f.o.b. Boston and Providence.

Kerosine was offered freely at New York, Philadelphia and Baltimore at 5.25 cents and sizable orders were taken at 5 cents. Stocks of water white kerosine were reported large and the desire to recover storage was given as the reason for the lower prices accepted by some sellers.

The posted price for Bunker C fuel oil was unchanged at $0.95 per barrel at both New York and Boston.

Diesel oil remained unchanged at $1.65 per barrel in all seaboard markets.

Gulf Coast Markets

Foreign Interest Lags Again

Staff Special
NEW YORK, May 29

LITTLE activity was noted in bulk markets at the Gulf the past week. There was a dearth of inquiries from abroad for gasoline and kerosine. Posted prices remained unchanged, but indications were that lower prices would be accepted on firm offers from buyers.

Cargo lots of U. S. Motor gasoline were quoted at 4.25 cents, f.o.b. the Gulf. The higher gravity grades were quoted as follows: 60-62, 400 end point, 4.50 cents, 61-63, 390 end point, 4.75 cents, and 64-66, 375 end point, 5 cents. The absence of firm business, leaves these prices untested, but the major suppliers continued to report them as their asking prices.

There were no sales reported in the cased goods market. Cargo lots of U. S. Motor in cases remained unchanged at $1.50 per case and 64-66, 375 end point at $1.60 per case. Kerosine in cases was offered at $1.25 for the prime white and $1.35 for the water white grade.

Panuco Crude

The Panuco crude market was comparatively quiet save for the sale of one cargo. The price for this oil remained unchanged at $0.45 per barrel, f.o.b. Tampico.

Wax Markets

Trading Generally Quiet

NEW YORK, May 29.—Wax markets at both New York and New Orleans lapsed into a state of quiet the past week. There were a few bids from foreign buyers for the fully refined grades but New York suppliers were unwilling to supply material on the basis of the offered prices.

While the prices asked for the various grades of fully refined wax remained generally unchanged, it was stated in several quarters that quotations for the 128-130 grade were a shade lower in the New Orleans market. However, no sales of this grade were reported in either the New Orleans or New York market.

Scale waxes were in slightly better demand. Several United Kingdom buyers inquired for lots of 50 tons for prompt shipment. Quotations ranged from 1.90 to 2 cents per pound; little business had been closed up to the end of the week, however.

Oil Trademarks For Copyright

THE following are trademark applications pertinent to our field pending in the United States Patent office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Barrister Building, Washington, D. C. trademark specialists.

As an additional service feature to its readers, this journal gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering. You may communicate with the Editor of this Department, or send your inquiry direct to the National Trade-Mark Company, stating that you are a reader of this journal.

"LINCO," in a circle of red and blue. Ser. No. 310,722. Lincoln Oil Refining Co., Robinson, Ill. For gasoline, kerosene, lubricating oils, and lubricating greases.

"DUROPENN." Ser. No. 312,458. Arthur F. Schroeder, doing business as A. F. Schroeder Oil Co., Milwaukee, Wis. For lubricating oils and greases made from Pennsylvania crude.

"SPRINGEEZ OIL." Ser. No. 288,378. Halstead Oil Co., Inc., New York City. For a preparation for use as a rust solvent and lubricant, and lubricating oils and greases.

"UNIVALVE." Ser. No. 299,531. Union Oil Co. of California, Los Angeles, Calif. For lubricating oils.

"IVORY MOTOR OIL." Ser. No. 311,948. James B. Berry's Sons Company, Chicago, Ill. For gasoline and motor lubricating oil

"SILENT FLASH." Ser. No. 312,170. Apex Oil Co., St. Louis, Mo. For gasoline.

"TWIN CO." Ser. No. 312,208. The Twin Cities Distributing Co., Covington, Ky. For lubricating oils, motor fuel oils and lubricating greases.

Want Those Customers To Motor More?

NEW YORK, May 28.—Get out in the car and motor. That's the gist of three booklets encouraging motor travel and vacation trips by automobile this summer, recently put out by the American Petroleum Institute. It's a blast at the railroads and steamship companies who are conducting intensive campaigns to draw this year's vacationing crowds to their own methods of transportation.

The circulars, in the usual peppy, popular style, small in size and easy to handle, are entitled "Gas?" "'Mornin'" and "School's Out!" Each one urges the motorist to ask the Institute about roads. They are for distribution at service stations.

Any quantity may be obtained at small cost by writing the Institute, at 250 Park Ave., New York City.

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Is Space at a Premium?

If it is, you will be interested in the new KELLOGG EM-3222-U Vertical Compressor. Requires a space only 21″ square. It can be located in any corner or recess.

It is the only upright air compressor on the market of conventional air compressor design, giving you such exclusive KELLOGG features as multiple V belt drive, air cleaner, counter-balanced crank shaft, and the famous KELLOGG Lubricating System.

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$227.00 and up, depending on motor specifications.

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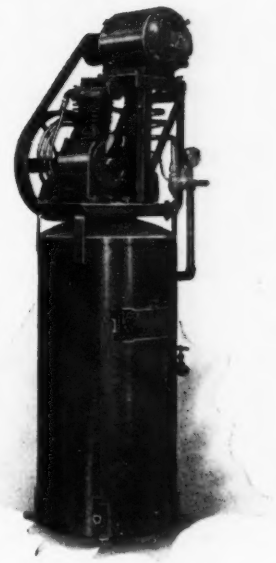

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Producers *Refiners* *Marketers* *Transporters*

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NEW YORK

Complete Seaboard Market

(Export Markets for whole year given in OIL HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets—complete for the whole year)

Eastern Domestic Market

(Prices for tank car lots, f. o. b. refinery or seaboard terminal, representing majority of sales and quotations. Prices shown below do not include inspection tax levied in Florida and South Carolina.)

	Prices June 1	Prices May 25	Prices May 18
U. S. MOTOR GASOLINE			
New York harbor	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
Portland district	6.50	6.50	6.50
Boston district	6.25	6.25	6.25
Providence district	6.25	6.25	6.25
Philadelphia district	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
Baltimore district	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
Norfolk district	6.00	6.00	6.00
Charleston district	6.00	6.00	6.00
Savannah district	6.00	6.00	6.00
Jacksonville district	6.00	6.00	6.00
CALIFORNIA U. S. MOTOR GASOLINE			
New York harbor	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
Philadelphia district	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
Baltimore district	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
‡DOMESTIC AVIATION GASOLINE			
New York harbor	9.50 –12.00	9.50 –12.00	9.50 –12.00
Philadelphia	9.50 –12.00	9.50 –12.00	9.50 –12.00
Baltimore	11.00 –12.00	11.00 –12.00	11.00 –12.00
Boston	11.50 –13.00	11.50 –13.00	11.50 –13.00

‡Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167°F. and not less than 122°F.; 50% recovery at 221°; 90% at 311°; 96% at 347° end point 374°F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

WATER WHITE KEROSINE			
New York harbor	5.00 – 5.25	5.00 – 5.25	5.25 – 5.50
Philadelphia district	5.00 – 5.25	5.25 – 5.50	5.25 – 5.50
Baltimore district	5.00 – 5.25	5.25 – 5.50	5.25 – 5.50
GAS OIL: 28-34 Gravity			
New York harbor	4.00 – 4.50	4.00 – 4.50	4.00 – 4.50
Boston district	4.00 – 4.50	4.00 – 4.50	4.00 – 4.50
FURNACE OIL: 36-40 Gravity			
New York harbor	5.00 – 5.50	5.00 – 5.50	5.00 – 5.50
Boston district	5.00 – 5.50	5.00 – 5.50	5.00 – 5.50
GRADE C BUNKER OIL (Lighterage 5c per bbl. additional)			
New York harbor	$0.95	$0.95	$0.95
Boston district	$0.95	$0.95	$0.95
DIESEL OIL			
New York harbor	$1.65	$1.65	$1.65

†Nominal.

New York Export Market

(Lubricating oils are per gal. in bbls. F.a.s. New York)

	June 1	May 25	May 18
CYLINDER OILS (Pennsylvania Products)			
Bright stock, No. 8 color	24.00 –25.00	24.00 –25.00	24.00 –25.00
Bright stock, No. 6½ color diluted	23.00 –24.00	23.00 –24.00	23.00 –24.00
600 D filtered	22.00 –25.00	22.00 –25.00	22.00 –25.00
600 Warren E filtered	18.00 –21.00	18.00 –21.00	18.00 –21.00
600 stm. refd. unfiltered	14.50 –16.00	14.50 –16.00	14.50 –16.00
650 stm. refd. unfiltered	17.00 –20.00	17.00 –20.00	17.00 –20.00
600 flash steam refined	17.50 –20.00	17.50 –20.00	17.50 –20.00
630 flash, steam refined	23.00 –25.00	23.00 –25.00	23.00 –25.00
RED PARAFFIN OILS (Vis. 100°)			
300 vis. No. 6½ color	17.00 –20.00	17.00 –20.00	17.00 –20.00
250 vis. No. 6 color	16.50 –17.50	16.50 –17.50	16.50 –17.50
200 vis. No. 6 color	14.75 –17.00	14.75 –17.00	14.75 –17.00
PALE PARAFFIN OILS (Vis. 100°)			
230 vis. No. 3¾ color	21.50	21.50	21.50
180 vis. No. 3¼ color	18.00 –20.00	18.00 –20.00	18.00 –20.00
100 vis. No. 2¼ color	12.50 –15.00	12.50 –15.00	12.50 –15.00

Wax Market

(Melting points are A.M.P. method. Prices in cents per pound, f.a.s. carload lots.)

NEW YORK	June 1	May 25	May 18
124-126 Yellow crude scale	1.85	1.85	1.95
122-124 White crude scale	1.90 – 2.00	1.90 – 2.00	2.00
124-126 White crude scale	1.90 – 2.00	1.90 – 2.00	2.00
123-125 Fully refined	3.00 – 3.125	3.125– 3.25	3.125– 3.25
125-127 Fully refined	3.00 – 3.125	3.00 – 3.125	3.125– 3.25
128-130 Fully refined	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
130-132 Fully refined	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
133-135 Fully refined	4.25 – 4.375	4.25 – 4.375	4.25 – 4.375
135-137 Fully refined	4.50 – 4.625	4.50 – 4.625	4.625
NEW ORLEANS			
124-126 Yellow crude scale	1.85	1.85	1.95
122-124 White crude scale	1.90 – 2.00	1.90 – 2.00	2.00
124-126 White crude scale	1.90 – 2.00	1.90 – 2.00	2.00
123-125 Fully refined	3.00 – 3.125	3.125– 3.25	3.125– 3.25
125-127 Fully refined	3.00 – 3.125	3.00 – 3.125	3.125– 3.25
128-130 Fully refined	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
130-132 Fully refined	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
133-135 Fully refined	4.25 – 4.375	4.25 – 4.375	4.25 – 4.375

Gulf Coast Bulk Market

(Prices are f. o. b. Gulf oil terminals representing sellers' opinions covering bulk shipments of 20,000 barrels or more, for export and / or coastwise shipment unless otherwise noted.)

GASOLINE	Prices June 1	Prices May 25	Prices May 18
U. S. Motor	4.25	4.25	4.25
60-62, 400 e.p.	4.50	4.50	4.50
61-63, 390 e.p.	4.75	4.75	4.75
64-66, 375 e.p.	5.00	5.00	5.00
U. S. Motor, (cases cargoes)	$1.50	$1.50	$1.50
64-66, cases (cargoes)	$1.60	$1.60	$1.60
KEROSINE			
44 water white	4.75	4.75	4.75 - 5.00
41-43 prime white	3.75	3.75	3.75 4.00
Water white, cases (cargoes)	$1.35	$1.35	$1.35
Prime white, cases (cargoes)	$1.25	$1.25	$1.25
GAS & BUNKER OILS			
*26-30 translucent gas oil	2.50 – 2.875	2.50 – 2.875	2.875– 3.00
*30 plus translucent gas oil	2.50 – 2.875	2.50 – 2.875	2.875– 3.00
Grade C bunker oil, for ships'-bunkers, per bbl.	$0.80	$0.80	$0.80
Grade C bunker oil, per bbl. in cargoes	$0.60 –$0.65	$0.60 –$0.65	$0.60 –$0.65

*Less than ½ of 1% sulphur.
†Represents sales only.

MEXICAN CRUDE AND BUNKER OILS (f. o. b. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid, per bbl.	$0.45	$0.45	$0.45
Grade C bunker oil for bunkering, taxes paid, per bbl.	$0.80	$0.80	$0.80
VENEZUELA CRUDE			
F. o. b. deepwater, Lake Maracaibo region	$0.67	$0.67	$0.70

SOUTH TEXAS LUBRICATING OILS (Viscosity at 100°F cold test 0 Tanker, f. o. b. Gulf oil terminals.)

100 vis. No. 2 unfiltered pale	4.75 – 5.50	4.75 – 5.50	4.75 – 5.50
200 vis. No. 3 unfiltered pale	6.75 – 7.50	6.75 – 7.50	6.75 – 7.50
300 vis. No. 3 unfiltered pale	7.75 – 8.50	7.75 – 8.50	7.75 – 8.50
500 vis. No. 3½ unfiltered pale	8.75 – 9.50	8.75 – 9.50	8.75 – 9.50
750 vis. No. 4 unfiltered pale	10.25 –11.00	10.25 –11.00	10.25 –11.00
1200 vis. No. 4 unfiltered pale	14.00 –14.75	14.00 –14.75	14.00 –14.75
200 vis. No. 5-6 red oil	6.00 – 6.75	6.00 – 6.75	6.00 – 6.75
300 vis. No. 5-6 red oil	7.00 – 7.75	7.00 – 7.75	7.00 – 7.75
500 vis. No. 5-6 red oil	7.50 – 8.25	7.50 – 8.25	7.50 – 8.25
750 vis. No. 5-6 red oil	9.25 –10.00	9.25 –10.00	9.25 –10.00
1200 vis. No. 5-6 red oil	13.00 –13.75	13.00 –13.75	13.00 –13.75

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

	June 1	May 25	May 18
Gasoline, U. S. Motor, 53-55 Gravity	3.25 – 4.00	3.25 – 4.00	3.375– 4.00
Gasoline, U. S. Motor-blends and special cuts	3.375– 4.125	4.00 – 4.75	4.25 – 4.75
Gasoline, 400 e.p. blend	3.50 – 4.25	4.25 – 5.00	4.50 – 5.00
Gas Oil, 30-34 per bbl.	$0.85 –$0.90	$0.85 –$0.90	$0.85 –$0.90
Diesel Oil, 27 plus, per bbl.	$0.85 –$0.90	$0.85 –$0.90	$0.85 –$0.90
Bunker oil, 14-18 per bbl.	$0.55 –$0.70	$0.55 –$0.70	$0.55 –$0.70
Fuel oil, 14-18 per bbl.	$0.55 –$0.80	$0.55 –$0.80	$0.55 –$0.80
Kerosine, 38-40 w.w., 125-150 flash, per gal.	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75
Cased Goods			
Gasoline, U. S. Motor	$1.45 –$1.55	$1.45 –$1.55	$1.45 –$1.55
Gasoline, 400 e.p. blend	$1.55 –$1.65	$1.55 –$1.65	$1.55 –$1.65
Kerosine, 38-40 w.w., 125-150 flash	$1.40 –$1.45	$1.40 –$1.45	$1.40 –$1.45

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrel.)

	June 1 Crude &/or Fuel	Refined Oil &/or Spirits
Calif. to U. K. or Continental ports*	†15	††15
Gulf to U. K. or Continental ports*	9	9
North Atlantic to U. K. or Continental ports*	7/6	7/6
Calif. to North Atlantic ports (not E. of N. Y.)	$0.45-$0.47	$0.45-$0.47
Gulf to North Atlantic ports (not E. of N. Y.)**	14-15	15

*Continental ports in the range between Bordeaux and Hamburg, both inclusive. **Venezuela loading same rate, for Tampico 2c to 3c per bbl. additional. †Last paid 12/6; owners ask 15. ††Last paid 11/6; owners ask 15.

SKILLED SUPERVISION

Guarantees the Quality of Gulf Products

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NAPHTHA—GAS—OILS
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The perfection of night lighting. A remarkable scientific achievement which gives you a clear distinct, yet *pleasant* light over the widest area. The effect of Hill-Standard's Diffusion Rings — the strongest light *without the glare.* — Hill-Standard's Lumiscope Equipment which trains the light exactly where it is wanted —and other exclusive features. You haven't seen real flood lighting until you see the Hillite at work.

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HILLITE attached to pole by neat, strong adjusting fixture drilled and tapped for conduit. Wires protected and hidden in pole, complying with underwriters specifications. Open or closed type of light furnished with top fixture and square steel pole complete.

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Largest Manufacturer of Equipment for Parks, Playgrounds, Water Sports, and Flood Lighting

Tank Wagon, Service Station Markets for Gasoline and Kerosine

(OIL PRICE HANDBOOK has t.w. and s.s. markets for a whole year, arranged for quick reference)

These Prices in Effect June 1, 1931, as Posted by Principal Marketing Companies

S.O.NEW JERSEY TERRITORY

	Gasoline		Total		Oil
	T.W.	Tax	T.W.	S.S.	T.W
Atlantic City, N. J.	10.7	3	13.7	15.7	11.5
Newark, N. J.	9.7	3	12.7	14.7	10.5
Annapolis, Md.	11.2	4	15.2	16.2	11
Baltimore, Md.	10.4	4	14.4	15.4	8.5
Cumberland, Md.	12.2	4	16.2	17.2	12
Washington, D. C.	10.9	2	12.9	13.9	10.0
Danville, Va.	12.0	5	17	18	11.8
Norfolk, Va.	10.5	5	15.5	16.5	10.0
Petersburg, Va.	11.5	5	16.5	17.5	11.3
Richmond, Va.	10.9	5	15.9	16.9	10.7
Roanoke, Va.	12.2	5	17.2	18.2	12
Charleston, W. Va.	11.7	4	15.7	16.7	11.5
Keyser, W. Va.	12.3	4	16.3	17.3	12.1
Parkersburg, W. Va.	10.4	4	14.4	15.4	10.2
Wheeling, W. Va.	11.6	4	15.6	16.6	11.4
Charlotte, N. C.	12.5	6	18.5	19.5	11
Hickory, N. C.	12.8	6	18.8	19.8	12.6
Mt. Airy, N. C.	12.7	6	18.7	19.7	12.5
Raleigh, N. C.	12.4	6	18.4	19.4	12.2
Salisbury, N. C.	12.7	6	18.7	19.7	12.5
Charleston, S. C.	10.5	6	16.5	17.5	10.3
Columbia, S. C.	12.4	6	18.4	19.4	12.2
Spartanburg, S. C.	12.7	6	18.7	19.7	12.5

Note: 2c per gallon discount off retail t.w. price of gasoline to dealers thru S. O. New Jersey territory, except Maryland and Washington, D. C. where discount is 3c.

S. O. NEW YORK

Greater New York City: Boroughs of Manhattan, Bronx, Queens & Kings	11.3	2	13.3	15.3	10
Borough of Richmond	11.7	2	13.7	15.7	12
Albany, N. Y.	12.6	2	14.6	16.6	10.5
Buffalo, N. Y.	11.8	2	13.8	15.8	10
Rochester, N. Y.	12	2	14	16	10
Syracuse, N. Y.	12.8	2	14.8	16.8	10.5
Boston, Mass.	11.5	3	14.5	16.5	11
Augusta, Me.	12.8	4	16.8	18.8	12.
Manchester, N. H.	12.4	4	16.4	18.4	11
Burlington, Vt.	13.3	4	17.3	19.3	11
New Haven, Conn.	12.6	2	14.6	16.6	10
Providence, R. I.	11.7	2	13.7	15.7	11

Discounts on gasoline: 2c per gal. off posted t. w. price to dealers, thru territory, except 3c to dealers inNew York City, effective Feb. 20, 1931.

ATLANTIC REFINING

Pittsburgh, Pa.	12	*	12	17	12
Philadelphia, Pa.	12	*	12	17	12
Allentown, Pa.	12	*	12	17	12
Erie, Pa.	12	*	12	17	12
Scranton, Pa.	12	*	12	17	12
Altoona, Pa.	12	*	12	17	12
Dover, Del.	12	3	15	17	12
Wilmington, Del.	12	3	15	17	12
Boston, Mass.	11.5	3	14.5	16.5	11
Springfield, Mass.	12.5	3	15.5	17.5	11
Worcester, Mass.	12.3	3	15.3	17.3	11
Fall River, Mass.	12.1	3	15.1	17.1	11
Providence, R. I.	11.7	2	13.7	15.7	10
Hartford, Conn.	12.5	2	14.5	16.5	10
New Haven, Conn.	12.6	2	14.6	16.6	10
Atlantic City, N. J.	10.7	3	13.7	15.7	11.5
Camden, N. J.	9.8	3	12.8	14.8	10.6
Trenton, N. J.	10.2	3	13.2	15.2	11
Annapolis, Md.	11.2	4	15.2	16.2	11
Baltimore, Md.	10.4	4	14.4	15.4	9.5
Hagerstown, Md.	11.9	4	15.9	16.9	11.7
Richmond, Va.	10.9	5	15.9	16.9	10.7
Wilmington, N. C.	10.6	6	16.6	17.6	10.4
Brunswick, Ga.	12	6	18	20	**14
Jacksonville, Fla.	9	6	15	17	12

Note: 2c per gal. discount off t.w. price of gasoline on sales to dealers; discount to commercial accounts under contract for one year in accordance with Code of Ethics.

*3-cent state tax is collected by retail dealer and paid by him directly to state.

**Georgia kerosine prices include 1c state tax.

S. O. KENTUCKY

Lexington, Ky.	12	5	17	18	12
Louisville, Ky.	11	5	16	17	11
Paducah, Ky.	12	5	17	18	11
Covington, Ky.	11	5	16	17	11
Jackson, Miss.	11	5	16	18	11.5
Vicksburg, Miss.	11	5	16	18	11.5
Birmingham, Ala.‡‡	13	4	17	19	13
Mobile, Ala.‡	13	4	17	19	13
Montgomery, Ala.*	13	4	17	17	13.5
Macon, Ga.	12	6	18	18	†13

Latest Changes in Tank Wagon Prices

Gasoline

S. O. Indiana—Stanolind Blue s. s. cut 1.1c, Milwaukee, to 12c including 4c tax, **May 23.**

Stanolind Blue s. s. cut 1.7c, La Crosse, to 12.5c including 4c tax, **May 25.**

S. O. California—Tank truck cut 2c Spokane to 14c, **May 26.**

Tank truck and wholesale prices cut 2.5c, Phoenix, to 13c and 15.5c respectively, **May 29.**

Retail price cut 2c, Spokane, to 17c, **May 29.**

Kerosine

Atlantic Refining — Kerosine cut 1c, Providence, to 10c, **May 22.**

	Gasoline		Total		Oil
	T.W.	Tax	T.W.	S.S.	T.W.
Atlanta, Ga.	10	6	16	18	*†12.5
Augusta, Ga.	12	6	18	20	†14
Savannah, Ga.	12	6	18	18	†12
Jacksonville, Fla.	9	6	15	17	12
Miami, Fla.	12	6	18	20	13
Tampa, Fla.	13	6	19	19	12
Pensacola, Fla.**	10	6	16	18	13

Note: Net price of gasoline to dealers is 2c under posted t.w. price thru S. O. Kentucky territory.

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosine at Montgomery included.

†Georgia kerosine prices include 1c state tax.

**Both tank wagon prices include 1c city tax at Pensacola which went into effect Oct. 15, 1926.

‡Mobile gasoline prices include 1c city tax.

‡‡Birmingham gasoline prices include 1c city tax.

*†3c discount off t.w. price of oil at Atlanta, meeting competition.

S. O. INDIANA

‡(Red Crown Gasoline)

Chicago, Ill.	11	3	14	14	9
Decatur, Ill.	11.4	3	14.4	14.4	9
E. St. Louis, Ill.	10.7	3	13.7	13.7	8.2
Joliet, Ill.	11.4	3	14.4	14.4	9
Peoria, Ill.	11.4	3	14.4	14.4	9
Quincy, Ill.	11.2	3	14.2	14.2	8.8
Springfield, Ill.	11.4	3	14.4	14.4	9
Indianapolis, Ind.	11.3	4	15.3	15.3	10.1
Evansville, Ind.	11.1	4	15.1	15.1	9.9
South Bend, Ind.	11.4	4	15.4	15.4	10.2
Detroit, Mich.	11.8	3	14.8	14.8	10.7
Grand Rapids, Mich.	11.7	3	14.7	14.7	10.6
Saginaw, Mich.	11.9	3	14.9	14.9	10.8
Green Bay, Wisc.	11.6	4	15.6	15.6	9.4
Madison, Wisc.	11.3	4	15.3	15.3	9.1
Milwaukee, Wisc.	11.1	4	15.1	15.1	8.9
La Crosse, Wisc.	12.2	4	16.2	16.2	10.
Minneapolis, Minn.	12.2	3	15.2	15.2	9.9
Duluth, Minn.	12.5	3	15.5	15.5	9.9
Mankato, Minn.	12.1	3	15.1	15.1	9.7
Des Moines, Ia.	11.5	3	14.5	14.5	9.3
Davenport, Ia.	11.5	3	14.5	14.5	9.3
Sioux City, Ia.	11.1	3	14.1	14.1	8.9
Mason City, Ia.	11.5	3	14.5	14.5	9.3
St. Louis, Mo.	*10.9	2	12.9	12.9	8.3
Kansas City, Mo.	†11.9	2	13.9	13.9	7.6
St. Joseph, Mo.	†11.5	2	13.5	13.5	7.5
Fargo, N. D.	13.9	3	16.9	16.9	11.9
Grand Forks, N. D.	14.2	3	17.2	17.2	12.2
Minot, N. D.	13.9	3	16.9	16.9	11.9
Pierre, S. D.	12	4	16	16	10.4
Huron, S. D.	12.3	4	16.3	16.3	10.7
Wichita, Kans.	9.8	3	12.8	12.8	7.8
Bartlesville, Okla.	8	5	13	16	7.5

‡Stanolind Blue prices are normally 2c under those shown above. At the following points, these prices are below normal on Stanolind Blue:

(Stanolind Blue Gasoline)

	T.W.	Tax	Total T.W.	S.S.
Chicago	8	3	11	11
Springfield, Ill.	9.4	3	12.4	10
St. Louis	*8.9	2	10.9	9.9
St. Joseph, Mo.	†6.9	2	8.9	8.9
Detroit, Mich.	9.8	3	12.8	11.9
Wichita, Kan.	6.8	3	9.8	8.8
Minneapolis, Minn.	10.2	3	13.2	12
South Bend, Ind.	9.4	4	13.4	12.5
Des Moines, Ia.	9.5	3	12.5	9.9
Sioux City, Ia.	9.1	3	12.1	9.1
Milwaukee, Wis.	9.1	4	13.1	12
La Crosse, Wis.	10.2	4	14.2	12.5

*Includes city tax of ½c.

†Includes city tax of 1c.

Discounts: Q.D.A., effective May 11, 1931, on gasoline:

To re-sellers, thru territory, except Chicago:

	Under 75,000 Gals. Off S.S. Price	75,000 Gals. and Over Off T.W. Price
Ethyl gasoline	3c	4c
Red Crown gasoline	2.5c	3.5c
Stanolind Blue	1c	2c

In Chicago, in any quantity, discounts are 4c per gal. on Ethyl gasoline, 3.5c on Red Crown, and 2c on Stanolind Blue, discounts being off service station prices in quantities up to 75,000 gallons, and off t.w. price in quantities of 75,000 gallons and over.

To consumers, thru territory, except Chicago:

	1,000 to 75,000 Gallons Off T.W. Price	75,000 Gals. and Over Off T.W. Price
Ethyl gasoline	3c	4c
Red Crown gasoline	2.5c	3.5c
Stanolind Blue	1c	2c

In Chicago, in quantities over 1,000 gallons: Ethyl gasoline, 4c; Red Crown 3.5c; Stanolind Blue, 2c, all discounts being off tank wagon price.

S. O. OHIO

	Gasoline		Total		Oil
	T.W.	Tax	T.W.	S.S.*	T.W.
Ohio statewide	12	4	16	17	13
Defiance, Hancock, Marion and Wyandot counties	12	4	16	16	13
Williams county	11	4	15	15	13

Note: Discount on gasoline to dealers and commercial consumers generally thru Ohio is 2c per gal. off above t.w. prices except in counties where prices are below statewide schedule, discount is generally 3c.

Discount on kerosine to dealers and commercial consumers is 3c per gal. off t.w. price thru Ohio.

S. O. NEBRASKA

Omaha, Neb.	8.9	4	12.9	12.9	9.25
McCook, Neb.	12	4	16	17.75	10.75
Norfolk, Neb.	11.75	4	15.75	16.75	9.75
North Platte, Neb.	12.75	4	16.75	17.75	10.5
Scottsbluff, Neb.	12	4	16	16	10.25

Note: Discounts: Ethyl gasoline, 3c off normal service station price; Red Crown gasoline, 2.5c off s.s. price, effective April 20, 1931.

S. O. LOUISIANA

	Gasoline				Oil
	Posted Retail T.W.	Tax	Total Posted Retail T.W	Posted Retail S.S.	T.W.
Little Rock, Ark.	10	6	16	17	11
Alexandria, La.	10	*6	16	17	†12
Baton Rouge, La.	10	5	15	16	†12
New Orleans, La.	9.5	*6	15.5	16.5	†12
Lake Charles, La.	10	*6	16	17	†12
Shreveport, La.	10	5	15	16	†12
Lafayette, La.	10	*6	16	17	†12
Bristol, Tenn.	13	5	18	19	14
Chattanooga, Tenn.	12	5	17	18	13
Knoxville, Tenn.	12.5	5	17.5	18.5	13.5
Nashville, Tenn.	11.5	5	16.5	17.5	12.5
Memphis, Tenn.	8	5	13	14	10

Note: Discounts in S. O. La. territory: To dealers and commercial consumers from the tankwagon, 2c per gal. off posted retail t.w. price.

*Lake Charles, Alexandria, New Orleans and Lafayette gasoline tax includes 5c state tax and 1c parish tax. New Orleans kerosine price includes 1c parish tax in addition to 1c state tax.

†Kerosine price in Louisiana includes 1c state tax.

Above prices include these inspection fees on both gasoline and kerosine, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosine; Arkansas, 1/20c on both: Florida, 1/8c on both; Illinois, 3/100c on both; Indiana, 1/25c to 1/2c on both; Kansas, 3/50c on both; Louisiana, 1/32c on gasoline; Minnesota, 3/50c on both: Missouri, 1/50c to 1/2c on both; Nebraska 3/100c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c to 4/5c on kerosine; Wisconsin, 1/25c on both.

Kerosine inspection fees only, per gallon; Iowa 7/100c; Michigan, 1/5c to 4/5c per gal.

Tank Wagon, Service Station Markets for Gasoline and Kerosine

These Prices in Effect June 1, 1931, as Posted by Principal Marketing Companies

MAGNOLIA PETROLEUM

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Muskogee, Okla.	8	5	13	16	8
Oklahoma City	5	5	10	12	8
Tulsa, Okla.	5	5	10	12	8
Fort Smith, Ark.	10.5	5	15.5	16.5	11
Little Rock, Ark.	10.5	6	16.5	17.5	11
Texarkana, Ark.*	12	4	16	16	11
Dallas, Tex.	9	4	13	16	8
Fort Worth, Tex.	8	4	12	14	8
Houston, Tex.	10	4	14	18	11
San Antonio, Tex.	10	4	14	18	10
El Paso, Tex.	10	4	14	18	12

*Within city of Texarkana, the state tax on gasoline is 4c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.

CONTINENTAL OIL

Denver, Colo.	11	4	15	18	12.5
Pueblo, Colo.	10	4	14	17	12
Grand Junc., Colo.	12	4	16	19	14.5
Casper, Wyo.	11	4	15	18	10
Cheyenne, Wyo.	12	4	16	19	11.5
Butte, Mont.	12	5	17	20	16
Helena, Mont.	15	5	20	23	16
Salt Lake City, Utah	13.5	4	17.5	20.5	16
Boise, Ida.	13	5	18	21	18
Twin Falls, Ida.	*15.5	5	20.5	..	18
Albuquerque, N. M.	11	5	16	20	14

*Less 3.5c on gasoline at time of delivery at Twin Falls.

S. O. CALIFORNIA

	State Tax	Gasoline Tank Truck	*Retail	Oil T.W.
San Francisco, Cal.	3	8	11	15.5
Los Angeles, Cal.	3	7.5	10.5	15.5
Fresno, Cal.	3	8	11	17
Phoenix, Ariz.	5	13	15.5	20
Reno, Nev.	4	16	20	19
Portland, Ore.	4	9.5	12.5	16.5
Seattle, Wash.	5	10	13	16.5
Spokane, Wash.	5	14	17	20.5
Tacoma, Wash.	5	10	13	16.5

Note: No discounts off above gasoline prices; tank truck prices are those to resale trade; wholesale prices are generally 6c above tank truck prices, except at Phoenix, 1c.

*Retail prices are those of Standard Stations, Inc., marketing subsidiary of the Standard Oil Co. of California.

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
ONTARIO					
Toronto	16	5	21	24.5	17
Ottawa	17	5	22	25.5	18
North Bay	20	5	25	30.5	21
Fort William	19.5	5	24.5	28	19.5
Border Cities, including Windsor	16	5	21	24.5	15
MANITOBA					
Winnipeg	18	5	23	27	18.5
SASKATCHEWAN					
Regina	22	5	27	31	22
ALBERTA					
Edmonton	23	5	28	31.5	23
Calgary	19.5	5	24.5	28	19.5
BRITISH COLUMBIA					
Vancouver	21	5	26	28	22
QUEBEC					
Montreal	17	5	22	25.5	18
Quebec City	19	5	24	27.5	20
Three Rivers	19	5	24	27.5	20
NEW BRUNSWICK					
St. John	18.5	5	23.5	27.5	20.5
Moncton	18.5	5	23.5	27.5	20.5
NOVA SCOTIA					
Halifax	18.5	5	23.5	27.5	20.5
PRINCE EDWARD ISLAND					
Charlottetown	18.5	5	23.5	27.5	20.5

Note: In districts surrounding these points 1c additional is added to city price.

NAPHTHA PRICES

	Oleum Spirits	V.M.&P. Naphtha	Cleaner Naphtha
Chicago	10.7	12.7	14.2
Detroit	13.4	14.9	15.7
Kansas City	†11.9	†13.4	†14.2
Milwaukee	12.4	*15.9	*16.7
Minneapolis	**16.7	**18.2	**19
St. Louis	11.6	13.1	13.9
New York		14	20
Boston		17	20

*Includes 2c state tax. †Includes 1c city tax.
**Includes 3c state tax.

Petroleum Spirits (Solvent)

Tank Cars (F.o.b. refinery or seaboard terminal)	
New York Harbor	9.50
Philadelphia district	9.50
Providence	10.00
Tank Wagon or Steel Barrels	
New York City	14
Syracuse	17
Rochester	17
Buffalo	16
Providence	17
Boston	17
Bridgeport	15
Newark	16
Philadelphia	14
Lancaster	17
Altoona	17
Baltimore	17

Note: 2c off above t.w. prices to large buyers in some instances.

Aviation Gasoline Prices

Following are tank wagon prices of aviation gasoline in principal marketing territories showing state and municipal taxes:

S. O. NEW JERSEY

Prices in Effect June 1, 1931

	T.W.	Tax	Total T.W.
Newark, N. J.	14.9	*	14.9
Baltimore, Md.	16.2	4	20.2
Washington, D. C.	17	2	19

*New Jersey road tax of 3c does not apply on aviation gasoline, exemption being claimed at time of purchase.
All above prices are on Stanavo Aviation Gasoline.

COLONIAL BEACON OIL CO.

New York City	17.5	2	19.5
Boston, Mass.	19	3	22

S. O. PENNSYLVANIA

Philadelphia, Pa.	16	3	19
Pittsburgh, Pa.	16	3	19
Altoona, Pa.	16	3	19

S. O. OHIO

Thru Ohio	15	4	19

Discounts given by S. O. Ohio: For airport delivery only; 2,000 gals. or over per month, 1c per gal.; 6,000 gals. or over per month, 2c; 12,000 gals. and over per month, 3c; 24,000 gals. and over per month, 4c.

S. O. INDIANA

	T.W.	Tax	Total T.W.
Chicago	14	3	17
Indianapolis, Ind.	14.3	4	18.3
Detroit, Mich.	14.8	3	17.8
Milwaukee, Wis.	14.1	2	16.1
Minneapolis, Minn.	15.2	3	18.2
St. Louis, Mo.	13.4	2.5	15.9
Kansas City, Mo.	13.9	3	16.9
Fargo, N. D.	16.9	3	19.9
Huron, S. D.	15.3	4	19.3
Wichita, Kan.	12.8	3	15.8

In S. O. Indiana territory, buyer pays state and city taxes on aviation gasoline, and if he can get a refund from the state, he does so. Kansas City tax of 3c includes 1c city tax; St. Louis tax of 2.5c includes ½c city ta

S. O. LOUISIANA

New Orleans, La.	18	6	24
Nashville, Tenn.	20	5	25
Memphis, Tenn.	19	5	24

2c per gal. discount off above posted retail t.w. prices to dealers and commercial consumers.

S. O. NEBRASKA

Omaha	16.25	4	20.25

2c per gal. refund to reseller.

CONTINENTAL OIL CO.

Denver, Colo.	14	4	18
Cheyenne, Wyo.	15	4	19
Helena, Mont.	18	5	23
Salt Lake City, Utah	16.5	4	20.5
Albuquerque, N. M.	15	5	20
Boise, Ida.	16	5	21

S. O. CALIFORNIA

Phoenix, Ariz.	17.5	4	21.5
Los Angeles, Cal.	16.5	3	19.5
San Francisco, Cal.	17	3	20
Reno, Nev.	21	4	25
Portland, Ore.	17.5	4	21.5
Seattle, Wash.	17.5	3	20.5
Spokane, Wash.	21.5	3	24.5

Note: 4c per gallon added to t.w. price, in S. O. California territory, to customers taking delivery direct into the fuel tank of planes.

Ohio Has New Field Representative

COLUMBUS, O., June 1.—E. W. Corns is a new field representative of the Ohio Petroleum Marketers Association. For the last 18 months the Ohio association has had only one field representative, I. G. Monroe, much of whose time has been spent in legislative matters. W. A. Milne is executive secretary and treasurer of the association.

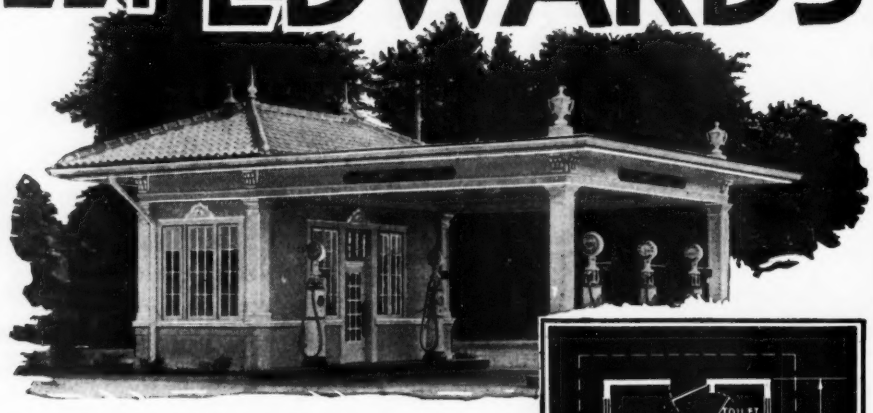
Mr. Corns is a graduate of Bethany college in West Virginia and took postgraduate work in sociology, recreation, and industrial relationships at Yale. He has done charity work at Scranton, Pa., and was with the Red Cross before, during, and after the World War. He served overseas with the first group of social workers that went to France and became a senior officer in the Commission for Belgian Relief.

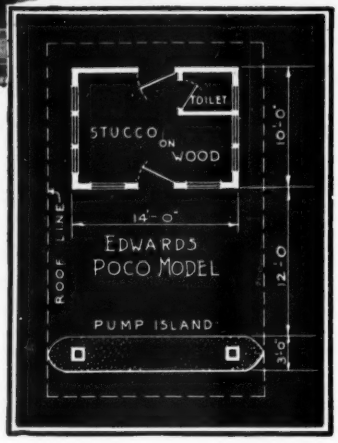
From 1926 to 1930 Mr. Corns was a field representative of the National Safety Council.

Crude Price Changes

DALLAS.—On June 2 Magnolia Petroleum Co. met Stanolind's cuts, posting a reduction of from 18 to 30 cents in Texas, Oklahoma and Kansas fields where it purchases on a gravity basis, except in East Texas and Panhandle districts. Magnolia's gravity schedule begins with a minimum grade of below 26 gravity, at 22 cents. with 1 cent differential for each succeeding degree of gravity, to top grade of 40 and above, which is 37 cents.

LET EDWARDS





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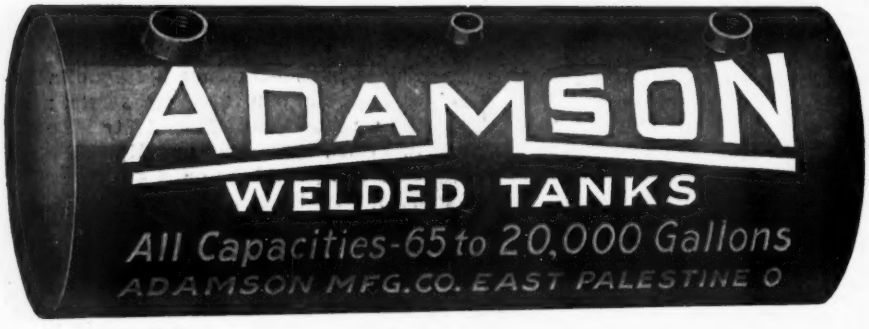

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NATIONAL PETROLEUM NEWS
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Cleveland, Ohio

Crude Oil Prices (in Effect June 1, 1931)

Crude prices for the whole year in OIL PRICE HANDBOOK published annually

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Bradford—Alleghany district (posted by Tide Water Pipe Co., Ltd.) (Effective Apr. 23, 1931) $2.00
Penna. Grade Oil in National Transit Lines (Effective Apr. 23, 1931) *1.75
Penna. Grade Oil in Southwest Penna. Pipe Lines (Effective Apr. 27, 1931) 1.60
Penna. Grade Oil in Eureka Pipe Lines (West Virginia) (Effective Apr. 23, 1931) 1.50
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.) (Effective Apr. 23, 1931) 1.25
Corning Grade in Buckeye Pipe Lines (Ohio) (Effective March 11, 1931) 0.80
Somerset oil in main system of Cumberland Pipe Line (posted by Ashland Refining Co.) (Effective March 6, 1931) $0.75
Ragland Grade in Cumberland Pipe Lines (Kentucky) (Effective Jan. 9, 1929) $0.60
*Oil run prior to July 1, 1929 is 5c less per bbl.

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines (Effective April 1, 1931) $0.60

MICHIGAN

(Posted by Dixie Oil Co.)

Traverse and Dundee (Muskegon), effective March 5, 1931, same gravity and price schedule as Stanolind posts in Oklahoma, Kansas and North Texas, which see below.

(Posted by Pure Oil Co.)

Midland, Midland County (March 13, 1931) $0.75

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective March 6, 1931

Wooster	$0.99	Princeton	$0.80
Lima	0.90	Illinois	0.80
Waterloo	1.20	West Kentucky	0.75
Indiana	0.50		

CANADIAN CRUDE

Posted by Imperial Oil Refineries, Ltd.

Effective Oct. 28, 1930

Petrolia $1.50
Oil Springs 1.57

OKLAHOMA, KANSAS and †NORTH TEXAS

Prices of *Stanolind Crude Oil Purchasing Co.

(In Oklahoma, Kansas, †North and North Central Texas)

Effective June 1, 1931

Below 29	$0.25	35-35.9	$0.32
29-29.9	0.26	36-36.9	0.33
30-30.9	0.27	37-37.9	0.34
31-31.9	0.28	38-38.9	0.35
32-32.9	0.29	39-39.9	0.36
33-33.9	0.30	40 and above	0.37
34-34.9	0.31		

*Prairie Oil & Gas withdrew postings in Oklahoma, Kansas and Texas, Jan. 1, 1931.

Humble Oil & Refining Co.

(In North and North Central Texas)

Effective March 10, 1931

Effective March 10, Humble pays same prices as Stanolind Crude Oil Purchasing Co. pays in Oklahoma, Kansas, etc., in North and North Central Texas fields.

Effective April 21, Humble posted in Ranger, North Texas, Moran and Cooke Counties, same prices as Stanolind in North Texas, Wichita, Wilbarger, etc., which see.

East Texas

Effective May 26, 1931

Below 35	$0.25	38-38.9	$0.33
35-35.9	.27	39-39.9	.35
36-36.9	.29	40 and above	.37
37-37.9	.31		

Above prices met May 26 by The Texas Co., Magnolia Petroleum and Gulf Production Co.

Magnolia Petroleum Co.

(In Oklahoma, Kansas, †North, *East Central Texas)

Effective March 5, 1931

Magnolia posts same prices in all three states as Stanolind, in Oklahoma and Kansas, except these lower grades:

Below 26	$0.40	27-27.9	$0.42
26-26.9	0.41	28-28.9	0.43

*Effective March 26, 1931, in East Texas.

†Except these North Texas fields, where prices are same as Humble and Stanolind in the same districts: Ranger, Clay, Montague, Wichita, Wilbarger, Young, Comanche, Eastland, Erath and Stephens, Tex., effective April 23, 1931.

Carter Oil Co.

(Oklahoma and Kansas)

March 10, 1931, same prices as Stanolind in Oklahoma and Kansas, which see.

PANHANDLE TEXAS

Humble Oil & Refining Co.

Effective April 21, 1931

Hutchinson and Carson Counties:

Below 35	$0.30	38-38.9	$0.38
35-35.9	0.32	39-39.9	0.40
36-36.9	0.34	40 and above	0.42
37-37.9	0.36		

Gray County

Below 35	$0.33	38-38.9	$0.41
35-35.9	0.35	39-39.9	0.43
36-36.9	0.37	40 and above	0.45
37-37.9	0.39		

Above prices met by Magnolia and The Texas Co. on April 23 in Hutchinson, Carson and Gray counties.

Wheeler County: Posted by Magnolia Pet. Co. Effective Apr. 10, 1930. Humble withdrew Wheeler county postings Apr. 10, 1930.

Below 30	$0.755	37-37.9	$1.11
30-30.9	0.805	38-38.9	1.145
31-31.9	0.855	39-39.9	1.18
32-32.9	0.905	40-40.9	1.215
33-33.9	0.955	41-41.9	1.25
34-34.9	1.005	42-42.9	1.285
35-35.9	1.04	43-43.9	1.32
36-36.9	1.075	44 and above	1.355

WEST TEXAS and NEW MEXICO

Humble Oil & Refining Co.

Effective April 21, 1931

Pecos and Winkler, all grades $0.35
Crane, Upton, Crockett, Ector, Howard and Glasscock Counties, all grades $0.30
Lea County, N. Mex. $0.325

April 23, 1931, The Texas Co. same prices in Crane, Upton, Winkler and Lea counties as Humble.

April 23, Magnolia same prices as Humble in Winkler, Crane, Upton, Howard, Glasscock and Mitchell counties.

SOUTH and SOUTHWEST TEXAS

(Posted by Humble Oil & Refining Co.)

All Effective April 21, 1931

Mirando $0.60
Salt Flat 0.53
Darst Creek 0.53
Pettus, Bee County 0.75

(Posted by Magnolia Petroleum Co.)

Effective April 23, 1931

Corsicana Heavy $0.38
Luling 0.38

(Posted by The Texas Co.)

Markham $0.50

NORTH LOUISIANA—ARKANSAS FIELDS

Prices of Standard Oil Co. of Louisiana

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto, Sabine, Cotton Valley, Sarepta and Carterville.

Effective March 10, 1931

Below 29	$0.43	35-35.9	$0.57
29-29.9	0.45	36-36.9	0.59
30-30.9	0.47	37-37.9	0.61
31-31.9	0.49	38-38.9	0.63
32-32.9	0.51	39-39.9	0.65
33-33.9	0.53	40 and above	0.67
34-34.9	0.55		

Smackover, all grades $0.45
Bellevue 0.45
*Urania, La. (April 21, 1931) 0.50
†East El Dorado (Calion) 0.45

*Posted by Louisiana Oil Refining Corp.

†Posted by Magnolia Petroleum Co.

March 10, 1931, The Texas Co. same schedule in Louisiana as Standard.

March 10, Magnolia met Standard schedule in Louisiana-Arkansas fields except it posts the same low grades in La.-Ark. as in Mid-Continent.

Stephens, Arkansas

Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

Effective March 10, 1931

Below 29	$0.38	29 and above	$0.41

GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective April 21, 1931

Grades A	$0.70	29-29.9	$0.69
Grades B:		30-30.9	0.71
Below 25	0.60	31-31.9	0.73
25-25.9	0.61	32-32.9	0.75
26-26.9	0.63	33-33.9	0.77
27-27.9	0.65	34-34.9	0.79
28-28.9	0.67	35 and above	0.81

On April 23, 1931, The Texas Co. posted same prices on Grades A and B Gulf Coast crude as Humble, except its schedule on Grades B goes to top grade of 40 and above, at 91 cents; a 2 cent differential applies for each gravity from Humble's 35 and above.

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Humble, Pierce Junction, Sugarland, Refugio county, and Raccoon Bend. All other fields are Grades A only.

Specifications for Grade "A" crude: Gravity: 25° and below, at 60° F: Viscosity: not less than 100 seconds at 100° F. Saybolt.
Sulfur: not over 4%.

Grade "B" includes all Coastal crude which does not meet the test for "A" grades.

Steel Barrel Standardization

WASHINGTON, June 1.—Simplified practice recommendation R20-28, covering steel barrels and drums, has been reaffirmed by the standing committee of the industry, without change, for another year, according to the division of simplified practice of the National Bureau of Standards, Washington.

This simplification program has reduced the number of varieties of steel barrels and drums from 66 to 25, or approximately 62 per cent.

Exports of petroleum residuum, including road oils, from the United States in 1930 totaled 23,000 barrels, compared with exports of 35,000 barrels in 1929 and 62,500 barrels in 1928.

The United Kingdom took one-seventh of United States exports of lubricating greases in 1930, which exports totaled 99,275,000 pounds.

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Crude Oil Prices (in Effect June 1, 1931)

(Prices are per barrel at the well)

(Crude Oil Prices for the whole year in OIL PRICE HANDBOOK published annually)

ROCKY MOUNTAIN FIELDS
(Posted by Midwest Refining Co.)
(Salt Creek prices effective March 5, 1931)

Salt Creek, below 29°		$0.43
" "	29-29.9	0.45
" "	30-30.9	0.47
" "	31-31.9	0.49
" "	32-32.9	0.51
" "	33-33.9	0.53
" "	34-34.9	0.55
Salt Creek	35-35.9	0.57
" "	36-36.9	0.59
" "	37 and above	0.61

(Posted by Ohio Oil Co. and Midwest Refining Co.)

Elk Basin	$0.90
Grass Creek light	0.90
Big Muddy	0.65
Lance Creek	0.98
Rock Creek	0.66
Mule Creek	1.20
Rex Lake	1.10
Pondera	1.45
†Osage	0.50
†Cat Creek, Mont.	0.90
Sunburst, Mont.	1.55
†Hogback, N. Mex. (April 1, 1931)	0.90

†Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin. Others are prices of Ohio Oil Co.

CALIFORNIA CRUDE
†Standard Oil Co. of California
Effective March 31, 1931

Gravity	Signal Hill, Seal Beach, Alamitos Heights, Huntington Beach, Inglewood, Olinda-Brea Canon, Athens-Rosecrans-Dominguez, Torrance, Richfield, Whittier, LaHabra, Montebello, Coyote Hills and Santa Fe Springs	Elwood Terrace	Newhall, McKittrick, Kern River, Midway-Sunset, Elk Hills, Buena Vista Hills, Lost Hills, Coalinga and Wheeler Ridge	*Santa Paula	*Orcutt
14-19.9	$0.65	F.O.B. Ship	$0.55	$0.60	$0.55
20-20.9	.65		.53	.58	.53
21-21.9	.62		.51	.56	.51
22-22.9	.59		.49	.53	.49
23-23.9	.56		.47	.50	.47
24-24.9	.53		.45	.47	.45
25-25.9	.50		.43	.44	.43
26-26.9	.47		.41	.41	.41
27-27.9	.44		.39	.38	.39
28-28.9	.41		.37	.35	.37
29-29.9	.38		.35	...	.35
30-30.9	.35		...	...	...
31-31.9	.35		...	...	...
32-32.9	.35		...	...	...
33-33.9	.35		...	...	...
34 and above	.35	$0.35	...	...	...

*Posted by Union Oil Co. of California, effective March 30, 1931.

†Postings on Kettleman Hills crude discontinued by Standard, March 10, 1931; on Playa del Rey, March 31, 1931.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

Refiners' Supplies

	June 1	May 25
Soda Ash Light 58% bags, cwt.	$1.20-1.38	$1.20-1.38
Silicate of Soda 60 deg. drums, cwt.	$1.75-1.90	$1.75-1.90
Silicate of Soda 40 deg. tank cars, cwt.	$0.70	$0.70
Silicate of Soda 40 deg. drums, cwt.	$1.00	$1.00
Sal Soda wks.	$0.90-1.20	$0.90-1.20
Caustic Soda 76% solid, cwt.	$2.25-2.50	$2.25-2.50
Sulfuric Acid 60 deg. tank cars, f. o. b. shipping point per ton	$11.00-12.50	$11.00-12.50
Sulfur, flowers of, cwt.	$3.10-4.00	$3.10-4.00
Liquid Chlorine, tank cars, wks., lb.	1.75	1.75

Compounders' Supplies

	June 1	May 25
Vegetable Oils		
Linseed carloads, spot, lb.	8.60	8.60
Tanks, spot	8.00	8.00
Soya Bean, Tank, coast, lb.	7.10	7.10
Oleic Acid		
Distilled, tanks, lb.	7.50	7.50
Distilled, bbls., lb.	8.75	8.75
Saponified, tanks, lb.	7.75	7.75
Saponified, bbls., lb.	8.625	8.625
Lard Oils		
Prime Winter Strained, lb.	12.50	13.00
Extra Winter Strained, lb.	8.75	9.75
Extra, lb.	8.50	9.50
Extra No. 1, lb.	7.75	8.75
No. 1, lb.	7.50	8.50
No. 2, lb.	7.25	8.25
Tallow oil, lb.	7.00	8.00
Neatsfoot Oil		
Pure, bbls., lb.	10.25	11.25
Extra, bbls., lb.	8.00	9.00
No. 1 bbls., lb.	7.75	8.75
Cold Pressed, lb.	15.00	16.00
Fish Oils		
Menhaden Oil		
Light Pressed, gal.	38-40	38-40
Light Pressed, tank cars, N. Y., gal.	30-32	30-32
Yellow bleached, gal.	42-44	42-44
Whale, extra winter bleached, gal.	75	75
Naval Stores		
Steam distilled turpentine, N. Y., gal.	51	51
Steam, distilled turpentine, Savannah, gal.	49	49
Gum turpentine, N. Y., gal.	53	53
Gum turpentine, f.o.b. cars Savannah, gal.	46	46
Wood Rosin, N. Y., bbl.	$5.10	$5.10
Wood Rosin F, Savn'h, bbl.	$5.00	$5.00
Gum Rosin B, N. Y., bbl.	$4.50	$4.80
Gum Rosin B, f.o.b. cars Savannah, bbl.	$3.75	$4.05
Rosin oil, pure, gal.	52	54
Rosin, oil, compounded, gal.	46	48
Pin Tar		
Kiln burnt, bbl.	$10.00-11.00	$10.00-11.00
Retort, bbl.	$11.00-12.00	$11.50-12.50
Alcohol		
Denatured Formula 5, in tanks, per gal.	24	24

Crude Price Changes

SHREVEPORT—On May 26 Atlas Pipe Line Co. posted 33 cents flat for all grades of East Texas crude.

PITTSBURGH, Pa.—On June 1 Pure Oil Co. cut Midland, Mich., crude 23 cents, to new price of 52 cents per barrel.

TULSA—On June 1 Stanolind Crude Oil Purchasing Co. reduced all Mid-Continent crude it purchases, including Oklahoma, Kansas, North and North Central Texas crudes, in amounts ranging from 18 to 30 cents. This follows a similar cut by Humble on East Texas grades May 26.

Last previous change in Mid-Continent grades was a cut of from 22 to 40 cents, March 5, and another one of 10 cents in five North Texas counties, April 21.

New prices begin with a minimum of 25 cents for oil below 29 gravity. Differential is reduced to 1 cent, from a former 2 cents. Next grade of 29 to 29.9 gravity is 26 cents, with 1 cent additional for each succeeding degree of gravity, to top grade of 40 and above, which is 37 cents.

CINCINNATI, June 1.—The annual picnic of the Cincinnati Oil Club is to be held June 11 at the Miami Boat Club, Miamiville, Ohio. There will be a ball game and other recreation features, according to E. J. Bengert, Cincinnati Oil Works Co.

OIL STOCKS AND FINANCES

Standard Oil Group Pays Less Dividends Second Quarter

NEW YORK, June 1

CASH dividend payments of the Standard Oil group of companies were $5,558,330 less the second quarter of 1931 than in the first quarter and $11,012,334 less than in the second quarter of 1930. Dividend figures for the group were compiled by Carl H. Pforzheimer & Co.

The decline the second quarter was caused principally by the reduction in the rate of payments by the Vacuum Oil Co. and the omission of dividends by Ohio Oil Co. on its common stock, and by Prairie Oil & Gas Co.

Vacuum is paying approximately $2,813,279 the second quarter, compared with $5,626,558 the first quarter. Ohio paid $1,662,013 on its common stock the first quarter, and Prairie approximately $1,220,716.

Standard Oil Co. of Kansas omitted its dividend the second quarter. Dividend rates were also reduced by Indiana Pipe Line Co. and New York Transit Co.

None of the larger Standard Oil companies changed the rate in the second quarter, Standard of New Jersey paying the usual extra dividend of 25 cents, while Standard of Indiana, Standard of New York and Standard of California voted to distribute the regular payments in the second quarter.

The record of quarterly disbursements for the past few years follows:

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Full Year
1931	$63,101,997	$57,543,667	.....	.....	.....
1930	66,687,168	68,555,901	$68,271,015	$83,012,644	$286,526,728
1929	63,101,701	66,053,389	65,426,981	75,063,856	269,645,927
1928	48,927,670	57,694,206	50,068,102	62,050,357	218,740,335
1927	55,873,413	54,291,615	47,728,440	55,724,472	213,617,940

Mexican Seaboard is Now Seaboard Oil & Gas

CLEVELAND, June 1. — Mexican Seaboard Oil Co. has changed its name to Seaboard Oil & Gas Co. John M. Lovejoy, president, said the change was made because the company was no longer a large operator in Mexico and that gas now formed a major part of its operations.

The company is operating principally in the Kettleman Hills district of California. He said the company oil production in Kettleman Hills would be around 4000 barrels a day by July. The company is supplying a large quantity of gas to the Pacific Gas & Electric Co., receiving between $40,000 and $45,000 a month from this source.

E. B. Allen has been elected a director to fill a vacancy. Other directors were re-elected at the annual meeting.

Tank Monopoly to Be Aired

New York, May 28.—It is understood that the New York City tank truck situation will be aired before the committee of the New York assembly. Maintenance of a monopoly by the New York City administration is charged.

Unrefined paraffin wax exports from the United States to the United Kingdom in 1930 were 33,000,000 pounds, compared with 30,500,000 pounds in 1929, and 32,000,000 pounds in 1928. This amounts to about two-fifths of total United States exports.

Sinclair Merger Efforts In Preliminary Stage

NEW YORK, May 29.—Preliminary negotiations are in progress for consolidating the Sinclair Consolidated Oil Corp., Prairie Oil & Gas Co., Prairie Pipe Line Co., and Tide Water Associated Oil Co., H. F. Sinclair said at the recent annual meeting of Sinclair Consolidated. Rio Grande Oil Co. may be taken into a merger, it was hinted. Mr. Sinclair recently was elected chairman of the Rio Grande board.

Negotiations aiming at the larger merger have taken place in the past but no agreement ever was reached.

Mr. Sinclair reiterated a statement he made in his annual pamphlet report that proration of crude oil production had not been successful. He said that while production had been prorated the price also had been prorated so little had been accomplished.

D. T. Pierce, assistant to Mr. Sinclair, was elected a director to succeed E. V. R. Thayer. Other directors were re-elected.

United States exports of petroleum asphalt in February totaled nearly 31,000 tons, valued at $595,222. The largest user, France, took 4855 tons. Java and Madura, the second largest importers, took 4380 tons.

Japan was the second largest importer of crude from the United States in February, taking 147,440 barrels.

The United Kingdom imported 1,242,810 barrels of gasoline from the United States in February, or one-third of our total exports of this product.

Derby Oil Co. Reports Gain in Income

CLEVELAND, June 1.—Derby Oil Co. and its subsidiary, Industrial Petroleum Co., which are controlled by Derby Oil & Refining Co., report a net profit of $1808 for the first quarter of 1931, compared with a net loss of $38,968 in the first quarter of 1930. This is one of few companies which has made a better showing this year than last.

Other companies which had reported the last two weeks their first quarter earnings statements, have shown losses.

Recent statements show the following results:

First Quarter	1931	1930
Derby Oil Co.	$1,808	*$38,968
Mexican Seaboard Oil Co.	†53,155	†291,539
North Central Texas Oil Co.....	7,631	45,954
Plymouth Oil Co.	†289,098	.....
Prairie Pipe Line Co.	1,892,700	5,222,000
Rio Grande Oil Co.	60,691	1,204,265
Tide Water Associated Oil Co. ..	*191,575	2,165,387
Tide Water Oil Co.	*1,145,344	651,165
Wilcox Oil & Gas Co.	*175,475	83,917

*Loss †Before federal income tax.

Crude production in Mexico in 1930 was the lowest in many years. It was 39,530,000 barrels, compared with 44,486,500 barrels in 1929; 50,151,000 barrels in 1928 and 64,120,000 barrels in 1927.

Exports of petroleum products from Mexico in 1930 were 26,600,000 barrels, compared with 27,000,000 barrels in 1929; 33,265,000 barrels in 1928; and 53,000,000 barrels in 1927.

Gasoline consumption in Peru totaled 160,570 barrels in 1930, compared with 172,222 barrels in 1929.

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KANSAS CITY ST. LOUIS FT. WORTH TORONTO

Transactions in Oil Shares on New York Stock Exchange

1929 High	1929 Low	1930 High	1930 Low	Listed Shares	Par Value	Company	Div. Rate	Last Paid	Transactions Week Ended May 29 Sale	First	High	Low	Last	Change§
42⅝	17⅛	42¼	16½	922,075	N.P.	Amerada Corp.	50cQ	Jan. 30, 31	4,100	16½	17	16½	16½	— ½
64¾	12½	37	5⅛	209,180	N.P.	American Republics Corp.	....	.....	100	6	6	6	6	0
47¼	34½	51	30	2,240,000	$25	Associated Oil	50cQ	Mar. 31, 31	20	20	20	20	20	— 9⅜
77⅞	30	51⅜	16⅝	2,683,868	25	Atlantic Refining Co.	25cQ	Mar. 16, 31	9,000	14⅛	14⅛	12⅝	12⅝	— 1½
49½	20	34	8⅝	2,257,108	25	Barnsdall Corp. A	25cQ	Feb. 16, 31	8,900	6⅞	7	6¼	6⅞	— ⅛
34½	25	35	21	2,060,966	25	California Petroleum Corp.	....	Jan. 1, 29	.....	.....	.....	.....	.....	.....
32⅞	12½	20⅝	8¾	1,444,970	N.P.	Colonial Beacon Oil Co.	....	.....	4,100	8½	8½	8¼	8¼	— ⅛
37¾	18	30½	7¾	4,610,258	N.P.	Continental Oil (Delaware)	....	.....	31,900	6¼	6⅜	6	6⅛	— ⅛
94¾	42¼	71⅛	22⅜	410,857	$100	General Asphalt Co.	75cQ	Mar. 16, 31	3,200	19	19⅜	19	19	— ⅛
109	26	116⅞	29¼	250,000	100	Houston Oil	....	.....	6,000	34⅜	34⅜	28½	28½	— 6½
..	..	10¼	6⅝	.....	..	Houston Oil, new	....	.....	.....	.....	.....	.....	.....	.....
53	13⅛	28⅜	3	699,066	10	Indian Refining	....	Dec. 15, 20	1,200	2⅛	2⅛	2⅛	2⅛	0
51¼	11½	27¾	3½	568,816	10	do certificates	....	.....	.....	.....	.....	.....	.....	.....
38⅝	16½	29½	21¼	3,994,150	N.P.	Lago Oil & Transport	....	Aug. 2, 27	.....	.....	.....	.....	.....	.....
18	7	12	3½	1,187,701	N.P.	Louisiana Oil Refining	....	.....	800	2½	2½	2⅛	2⅛	0
100¼	80	89½	60	40,000	$100	do pfd.	$1.62½Q	Feb. 14, 31	.....	.....	.....	.....	.....	.....
18½	5⅞	10⅜	1¾	330,000	N.P.	Maracaibo Oil Exploration	....	.....	400	1¼	1½	1¼	1½	+ ⅜
295	176	182	150	459,428	$100	Mexican Petroleum	$3Q	Jan. 20, 31	.....	.....	.....	.....	.....	.....
105	102	100	100	120,000	100	do pfd.	$2Q	Jan. 20, 31	.....	.....	.....	.....	.....	.....
69¾	9¼	37	9¾	1,244,383	N.P.	Mexican Seaboard Oil	....	Oct. 15, 24	40,600	14½	14½	11⅛	11⅛	— 3½
39⅞	22⅛	33	11	1,899,138	N.P.	Mid-Continent Petroleum	50cQ	Feb. 16, 31	4,200	8	8	7	7⅛	— ⅞
3⅝	¾	2½	¾	908,171	N.P.	Middle States Oil ctfs.	....	.....	.....	.....	.....	.....	.....	.....
..	..	32	16	6,708,086	N.P.	Ohio Oil Co.	25cQ	Mar. 14, 31	.....	.....	.....	.....	.....	.....
69	40¼	64¼	42	1,000,000	$50	Pan Amer. Petrol. & Trans.	....	Oct. 20, 27	100	25	25	25	25	— 5½
69¼	40½	67½	32	2,422,221	50	do B	....	Oct. 20, 27	500	25	25	25	25	— 4
15¼	3	12¾	1¾	199,370	N.P.	Panhandle Prod. & Refg.	....	.....	200	1¾	1¾	1⅝	1⅝	+ 1/16
76	47½	80	47½	25,666	$100	do pfd.	....	July 2, 23	.....	.....	.....	.....	.....	.....
..	..	27½	6	2,937,900	N.P.	Petroleum Corp. of America	37½cQ	Dec. 31, 30	11,800	6¾	6⅞	6½	6½	— ⅜
47	24¼	44¾	12	2,670,089	N.P.	Phillips Petroleum Co.	50cQ	Jan. 2, 31	20,700	6⅛	6¼	5½	5⅝	— ½
3⅜	1	2½	½	1,184,917	$25	Pierce Oil Corp.	....	.....	3,000	½	⅝	½	⅝	0
51½	20	52	7½	150,000	100	do pfd.	....	Feb. 1, 22	300	9½	9½	9	9	0
5⅞	½	7⅛	1⅜	2,500,000	N.P.	Pierce Petroleum Corp.	10c	Feb. 16, 31	5,500	1⅝	1⅝	1½	1½	— 1/16
65⅝	40½	54	11¼	2,435,670	$25	Prairie Oil & Gas Co.	50cQ	Mar. 31, 31	12,200	9½	9½	8¼	8½	— 1¼
65	45	60	16⅝	4,050,000	25	Prairie Pipe Line Co.	75cQ	Mar. 31, 31	3,100	20¼	20¼	18⅛	18⅛	— 1⅝
25⅞	4	31	1	749,017	50	Producers & Refiners Corp.	....	Sept. 15, 23	800	2¾	2¾	2½	2½	— ¼
46¾	25½	38	11½	56,907	50	do pfd.	....	May 4, 25	190	6½	6½	6½	6½	— ½
30¾	20	27¼	7⅝	3,038,370	25	Pure Oil Co.	....	Sept. 1, 30	5,700	6	6	5⅞	5⅞	— 1/16
116	108	114¾	90½	130,000	100	do 8% pfd.	$2Q	Apr. 1, 31	430	75	75	66⅜	72	— 3
49⅝	22⅝	28¼	4⅛	2,891,735	25	Richfield Oil (California)	....	Sept. 1, 30	3,300	1½	1½	1⅛	1⅛	0
42½	15	25¾	5	1,235,270	N.P.	Rio Grande Oil Co.	....	July 25, 30	6,500	4¼	4¼	4	4⅛	— 1/16
64	43⅛	56½	37⅛	951,310	$13.40	Royal Dutch (N. Y. shares)	$1.3404	Jan. 31, 31	8,700	28⅜	28⅜	27⅛	27⅛	— 1⅜
55¾	43⅜	48⅜	26	77,492	£2	Shell Trans. & Trading	96.6c	Jan. 23, 31	.....	.....	.....	.....	.....	.....
31¾	19	25½	5⅞	13,069,076	N.P.	Shell Union Oil Corp.	....	June 30, 30	8,100	5⅛	5⅛	4¾	5	— 1/16
..	..	106¼	62	400,000	100	do pfd.	$1.37½Q	Apr. 1, 31	2,400	35¼	35¼	30	31	— 4
40¼	15	37	5⅝	869,255	10	Simms Petroleum Co.	....	Sept. 15, 30	3,800	5½	6	5½	5½	— ¼
45	21	32	9¾	5,455,665	N.P.	Sinclair Consolidated Oil Corp.	25cQ	Jan. 15, 31	36,100	8½	8½	7⅜	7⅜	— ⅝
111	103	112¼	86	154,685	100	do pfd.	$2Q	Feb. 14, 31	300	83¾	83¾	82½	82½	+ ¼
46½	42	42	10⅛	1,097,650	$25	Skelly Oil Co.	50cQ	Dec. 15, 30	1,500	4⅛	4¼	4⅛	4⅛	0
..	..	99¾	43	120,000	100	do pfd.	$1.50Q	Feb. 1, 31	.....	.....	.....	.....	.....	.....
..	..	106	98	750,000	100	S. O. Export Corp. pfd.	$2.50S.A.	Dec. 31, 30	.....	.....	.....	.....	.....	.....
81⅞	51½	75	42¼	13,016,434	N.P.	S. O. California	62½cQ	Mar. 16, 31	20,100	35½	35½	33⅝	34	— 1
..	..	49	14⅜	320,000	$25	S. O. Kansas	25cQ	Mar. 16, 31	1,400	9⅜	9⅜	9	9¼	— ⅜
83	48	84⅞	43½	25,443,643	25	S. O. New Jersey	‡25cQ	Mar. 16, 31	70,200	34⅜	34⅝	33	33	— 1⅜
48¼	31¾	40⅝	19¾	17,809,530	25	S. O. New York	40cQ	Mar. 16, 31	37,100	17½	17½	15½	15¾	— 1⅜
86⅜	55	70	39	1,416,911	N.P.	Sun Oil Co.	25cQ	Mar. 16, 31	300	33⅞	33⅞	32	32	— 1¾
105½	100	107¾	97¾	100,000	$100	do pfd.	$1.50Q	Mar. 2, 31	140	97⅞	97⅞	96	96	— 1¾
24	5¼	9⅜	¾	1,026,979	N.P.	Superior Oil Corp.	....	.....	1,700	⅞	⅞	¾	⅞	+ 1/16
71⅞	50	60½	28¼	9,850,724	$25	The Texas Corp.	75cQ	Apr. 1, 31	35,900	20½	20⅝	19⅛	19½	— 1
23⅞	9½	14½	4	929,947	10	Texas Pacific Coal & Oil	....	Dec. 31, 29	2,500	3¾	3¾	3½	3½	— ½
23½	10	17¾	5⅞	5,881,980	N.P.	Tide Water Associated Oil	30cS.A.	Feb. 16, 31	5,200	4¾	4¾	4⅜	4⅜	— 1/16
90⅞	74⅛	89¾	56	732,550	$100	do pfd.	$1.50Q	Jan. 2, 31	700	41½	41½	40	40	— 2¼
40	14	31	13	2,191,820	N.P.	Tide Water Oil Co.	20cQ	Dec. 31, 30	.....	.....	.....	.....	.....	.....
97½	85⅛	94⅞	71	199,443	$100	do pfd.	$1.25Q	Feb. 16, 31	.....	.....	.....	.....	.....	.....
..	..	24	12⅛	3,339,150	N.P.	Transcontinental Oil	....	May 1, 30	.....	.....	.....	.....	.....	.....
57	42⅛	50	20⅛	2,201,008	$25	Union Oil Co. (California)	50cQ	Feb. 10, 31	6,100	17⅛	17⅛	16¼	16⅝	— 1⅛
..	..	38½	23	1,254,048	N.P.	Union Tank Car Co.	40cQ	Mar. 2, 31	.....	.....	.....	.....	.....	.....
42⅞	15	27	4½	777,603	N.P.	Warner Quinlan Co.	....	July 3, 30	.....	.....	.....	.....	.....	.....
38	25	29½	26	490,000	N.P.	White Eagle Oil & Refg.	....	Apr. 20, 30	.....	.....	.....	.....	.....	.....
29¾	12⅞	21	6½	428,967	N.P.	Wilcox Oil & Gas Co.	....	May 10, 28	900	5¼	5¼	4¼	4¼	— ⅞

*New high †New low ‡Also extra s-Stock §From close of preceding week. Total sales 440,080

Texas Co. Completing Chemical Plant

TULSA, May 29.—The chemical plant of the Texaco Salt Products Co., is nearing completion and will be in operation on a large scale late in June or early in July.

This plant, designed to make salt products from the salt water wells adjacent to the company's site in West Tulsa, will represent an investment of approximately $2,000,000. The site adjoins the Texas Co.'s refinery, and one feature of the chemical plant will be the utilization of waste heat from the refinery, and the utilization of the brine in the cooling system at the refinery.

The plant is designed along the line perfected by Dr. Otto V. Martin, who is director in charge of operations. Dr. Martin a few years ago built a plant at Sand Springs. The one he now is building is on a much larger scale and embodies several improvements.

A score or more of products will be made, according to reports, but one persistent rumor is to the effect the plant will be a big source of supply for bromine which is used in manufacturing Ethyl fluid.

Third Grade Gasoline Sold in New York

NEW YORK, June 1.—Third grade gasoline entered the New York retail market last week. The Sinclair Refining Co. introduced "Sinclair Green" in the metropolitan area.

The Pure Oil Co. is marketing a third grade gasoline in the east also, through 13 stations in Philadelphia.

Sinclair has extended its third grade market in Ohio, originally confined to Cleveland, to include Dayton and Columbus. Sinclair's price in Ohio now is 15 cents, including state tax, for the third grade. This is 2 cents under the posted price.

In a newspaper account of the third grade movement here last week it was reported that Sinclair had third grade gasoline on sale in 465 highly competitive cities and towns in 17 states "with surprisingly good results."

Pittsburgh Stock Exchange

Transactions Week Ended May 29, 1931

	Sales	High	Low	Last	Change Over Week
Ark. Nat. Gas.	175	3½	3½	3½	—1⅛
do pfd.	2,457	6⅛	†5½	5½	— ¾
Devonian Oil.	370	5	4½	5	+ ½
Lone Star Gas.	8,629	16½	15⅛	15½	—1
do pfd.	45	100	100	100	—1
Pgh. Oil & Gas.	230	1½	1½	1½	0
Plymouth Oil.	2,150	7¼	†6½	6⅝	— ⅞
West. Public Serv.	2,190	8	†7	7¼	— ⅝

†New low record.

N. P. N. Service Record

Some of the requests for information, data and advice, which were taken care of in various National Petroleum News offices in the past week are:

New York oil company engineer supplied with bibliography on detonation and anti-knock motor fuels from 1928 to date.

* * *

New Jersey inquirer told something of the extent to which oil companies use industrial expositions and radio for advertising lubricants, what market research on motor oil is being done, and furnished list of 20 principal oil company house organs, the names of publishers, and their addresses.

* * *

Missouri oil jobber told to write for circular No. 154 put out by the Bureau of Mines on tables telling how to make temperature corrections on gasoline, addressing the Superintendent of Documents, Government Printing Office, Washington, D. C. and enclosing 30 cents in coin or money order; also furnished example for calculation of outage.

* * *

Michigan oil jobber told to write for complete data on methods for reclaiming used crankcase oils to Dr. W. H. Herschel, U. S. Bureau of Standards, Washington, D. C.; also furnished names and addresses of 12 principal makers of devices for doing this work.

* * *

A Michigan, Pennsylvania and South Dakota oil jobber furnished names and addresses of motor oil refiners; the first two being furnished makers of 100% pure Pennsylvania oil, and the latter, with names of all principal makers.

* * *

Colorado inquirer told about associations of oil jobbers and marketers, how they organize, what their aims are, what results have been accomplished through such associations, and furnished other general information on the benefits of these organizations.

* * *

Manitoban oil company referred to four U. S. laboratories where he may have analysis made of various nationally advertised motor oils.

* * *

Minnesota fire apparatus manufacturer referred to U. S. Bureau of Standards Circular No. 154, for tables on specific gravities of various petroleum products at various temperatures, indicating that mathematical relationship between suction characteristics of water as compared to petroleum products is the simple ratio of the specific gravities of the materials involved.

* * *

Michigan oil jobber given explanation of iron carbonyl, its action as an anti-knock compound, and told where he may buy it in this country.

* * *

The following names and addresses of refiners and compounders were furnished various oil jobbers during the past week:

Maine tire dealer, 15 Pennsylvania motor oil and grease makers.

Colorado oil jobber, 15 Mid-Continent refiners from whom he can purchase lube oils in tank car lots; also names of seven makers of 30-gallon oil containers with pumps.

New Jersey inquirer, 10 refiners of motor oils and greases from whom he could purchase oils to put out under his own name.

THE OIL INDUSTRY EXCHANGE

Positions Wanted

LUBRICATION ENGINEER desires connection. Twelve years experience automotive and industrial surveys. Technical education. Will locate in any territory. Excellent references. Address Box 735.

DISTRICT SUPERINTENDENT. Successful record with major company thoroughly experienced in marketing, sales organization and general operation, bulk and retail outlets, desires connection. Address Box 728.

PENNSYLVANIA GRADE CRUDE REFINERS

You can obtain the services, at a reasonable salary, of a chemical engineer experienced in refining your crude for lubricants as well as specialties. Has held control, research and executive positions. Under present conditions you should investigate.

Write Box 732

PETROLEUM CHEMIST, Ch. E. Over five years successful service as analytical, research and petroleum chemist. Excellent references. Address Box 734.

EXCEPTIONAL SALES EXECUTIVE
(Now Employed)

Qualified to hold positions as:

- Assistant to Executive Officer in Charge of Sales
- Manager of Tank Car Sales
- Manager or Assistant Manager of Retail Marketing Division
- Special Representative

Has had complete experience in both wholesale and retail marketing in the petroleum industry.

Thirty-six years old, married and a technical school graduate. Young enough to be energetic and have creative ideas, but old enough to be seasoned and well balanced.

Entirely familiar with markets and conditions in the South and Central West.

Proof and references can be given from former employers, present employer, employees and customers, which will show exceptional ability as a producer, leader, and sales director.

An answer to this advertisement will receive complete details and references.

Address Box 729

Situations Open

WANTED—Salesman to call on oil jobbers in and surrounding Chicago to sell complete line of lubricating oils. Salary, commission and expenses. Address Box 733.

Professional Services

ROYAL E. BURNHAM
Attorney-At-Law
Patent and Trade-Mark Practice
Exclusively
Continental Trust Building
Washington, D. C.

Equipment Wanted

WANTED — Computing automatic platform scale for weighing lubricating oils and greases. Must be in good condition and reasonably priced. Address George C. Peterson Co., 2606 Elston Ave., Chicago, Ill.

For Sale

USED EQUIPMENT FOR SALE

2—200 H. P. Skinner Engines
8—6 x 60 Bonnot Rotary Kilns
2—6 x 50 Bonnot Rotary Kilns
10—3 x 25 Bonnot Rotary Coolers
6—Orams Double Stave Jointers
7—Orams Stave Equalizing Machines

If interested, Address Mr. J. R. Taylor, Purchasing Agent, Room 2018, 61 Broadway, New York City.

Miscellaneous

WHAT IT COSTS

"For Sale," "Wanted to Buy," "Help Wanted," "Business Opportunities."

"Miscellaneous" classifications, set in type this size without border—10 cents a word. Minimum charge, $3.00.

"Position Wanted" — 5 cents a word. Minimum charge $1.00.

Advertisements set in special type or with border—$4.00 per column inch.

Copy must reach us not later than Friday preceding date of issue.

All advertisements carried on this page are payable in advance.

Advertisers having box numbers should be addressed in care of National Petroleum News, 1213 West 3rd Street, Cleveland, Ohio, unless otherwise specified.

Standard Oil Stocks on New York Curb

1929 High	1929 Low	1930 High	1930 Low	Outstanding Shares	Par Value	Companies	Div. Rate	Last Paid	Transactions Week Ended May 29 Sales	First	High	Low	Last	Change§
18¾	13½	18½	12¼	.....	£1	Anglo-Amer. Oil voting stk. ctfs..	.....	June 5, 29	.....	.....	.....	.....	.....	.....
17⅛	11	19	12	.....	£1	do non-voting stk. ctfs.....	.....	June 5, 29	.....	.....	.....	.....	.....	.....
2½	¾	1	⅜	500,000	N.P.	Atlantic Lobos Oil	.....	.....	.....	.....	.....	.....	.....	.....
4⅛	1	1½	⅛	200,000	$50	do pfd.....	.....	.....	.....	.....	.....	.....	.....	.....
46½	25	25	11¼	40,000	25	Borne Scrymser Co.....	$1S.A.	Oct. 15, 30	.....	.....	.....	.....	.....	.....
74¼	55	69	39⅞	200,000	50	Buckeye Pipe Line Co.....	$1Q	Mar. 14, 31	100	44⅞	44⅞	44⅞	44⅞	— 1¼
210	130	184⅞	100¼	120,000	25	Chesebrough Mfg. Co.....	‡$1Q	Mar. 31, 31	100	110	110	110	110	— 5
11⅜	5⅝	7⅝	3	.....	N.P.	Creole Petroleum Co.....	.....	.....	4,000	2⅛	2⅛	2⅛	2⅛	— ⅛
75⅜	40	65⅜	20¼	30,000	$50	Cumberland Pipe Line Co.....	50cQ	Mar. 16, 31	50	22¼	22¼	22¼	22¼	— ⅛
70½	42	54¾	26	50,000	100	Eureka Pipe Line Co.....	$1Q	Feb. 2, 31	.....	.....	.....	.....	.....	.....
..	..	6¾	2½	280,000	N.P.	Galena Oil Corp. w.i.....	.....	.....	500	1⅜	1⅜	1⅛	1⅛	— ⅜
..	..	37¼	23⅛	.....	N.P.	General Petroleum Corp. w.i.....	.....	.....	100	15½	15½	15½	15½	— 2⅜
128	74⅛	119	57¼	2,974,645	$25	Humble Oil & Refg. Co.....	‡50cQ	Jan. 1, 31	7,700	52½	52½	51⅝	51⅝	— 1⅜
41	22	30	15	26,490,741	N.P.	Imperial Oil, Ltd.....	12½cQ	Mar. 2, 31	9,500	10⅞	10⅞	9⅞	10	— 1
42⅛	26	41	14½	300,000	$10	Indiana Pipe Line Co.....	50cQ	Feb. 14, 31	500	11⅞	11⅞	11⅞	11⅞	+ ⅜
29⅜	15	24	11⅜	14,247,880	N.P.	International Petroleum Co.....	25c	Dec. 15, 30	46,200	10⅝	10⅝	9¾	9¾	— ⅞
25⅞	10½	22⅜	11½	509,000	$12½	National Transit Co.....	25cQ	Mar. 16, 31	100	12½	12½	11⅞	11⅞	— ⅜
17¾	10·	21	10⅛	100,000	10	New York Transit Co.....	40cQ	Jan. 15, 31	200	8¼	8¼	8	8	+ ⅛
63	41	54	26¼	40,000	50	Northern Pipe Line Co.....	$2S.A.	Jan. 2, 31	50	29¼	29¼	29¼	29¼	— ⅜
105½	103¾	108	100⅜	600,000	100	Ohio Oil pfd.....	$1.50Q	Mar. 14, 31	.....	.....	.....	.....	.....	.....
44½	18⅝	32	12	400,000	25	Penn Mex. Fuel Co.....	$1	Dec. 15, 30	300	10⅛	10⅛	8½	8½	— 3½
50	29	33	4⅞	160,000	25	Solar Refining Co.....	.....	Dec. 20, 29	.....	.....	.....	.....	.....	.....
23½	13	20⅛	6¾	100,000	10	Southern Pipe Line Co.....	50c	Mar. 12, 31	100	11¾	11¾	11¾	11¾	— 2⅜
60¼	35⅛	45⅞	18	1,200,000	25	South Penn Oil Co.....	25cQ	Mar. 31, 31	900	12¾	12⅞	12½	12⅞	+ ⅛
70	45	64	32	35,000	50	Southwest Pa. Pipe Lines.....	$1Q	Apr. 1, 31	.....	.....	.....	.....	.....	.....
63	45	59⅞	30	16,850,587	25	S. O. Indiana.....	50cQ	Mar. 16, 31	20,800	25	25	21½	21½	— 3⅜
46⅞	29	40½	18⅞	2,577,124	10	S. O. Kentucky.....	40cQ	Mar. 31, 31	6,600	17	17⅜	16¼	16½	+ ½
50¼	40	48⅞	34	188,159	25	S. O. Nebraska.....	50cQ	Mar. 20, 31	290	24⅜	24⅜	23¾	23¾	— ⅛
129	60	108½	43¼	560,000	25	S. O. Ohio.....	62½cQ	Apr. 1, 31	400	42	42	41	41	— 1¼
..	..	..	..	120,000	100	do 5% pfd.....	$1.25Q	Jan. 15, 31	20	103	103	103	103	— ¾
124½	113½	122	115¼	70,000	100	do 7% pfd.....	$1.75Q	Dec. 1, 30	.....	.....	.....	.....	.....	.....
18	5⅛	10	4	34,158	25	Swan Finch Oil Corp.....	.....	Jan. 15, 29	.....	.....	.....	.....	.....	.....
133¾	75⅛	97⅞	45⅜	5,139,887	25	Vacuum Oil Co.....	$1Q	Mar. 20, 31	10,500	32⅛	32¾	28	28	— 3⅞

*New high †New low ‡Also extra §From close preceding week.

Independent Oils on New York Curb

1929 High	1929 Low	1930 High	1930 Low	Par Value	Companies	Transactions Week Ended May 29 Sales	First	High	Low	Last	Change§
.72	⅛	⅝	⅛	$1	Amer. Contr. Oilfields	.....	.....	.....	.....	.....	.....
8⅝	1⅛	4½	½	5	Amer. Maracaibo....	5,300	¾	¾	⅝	⅝	— ⅛
4¾	1	1⅜	1¼	10	Argo Oil.....	.....	.....	.....	.....	.....	.....
26	3¾	16¾	4⅝	N.P.	Arkansas Nat. Gas...	2,100	4	4	3¼	3¼	— ⅛
24¾	6½	16⅝	4¾	N.P.	do Class A.....	10,300	3⅝	3¾	3⅜	3½	— ⅛
9	4	8⅛	6¼	10	*do pfd.....	4,200	6	6	5⅜	5¾	— ⅛
70	50	28½	13½	N.P.	British American Oil..	100	9¼	9¼	9¼	9¼	+ ⅛
4⅞	⅞	2¾	⅝	¼	Carib Syndicate.....	900	1	1	⅞	1	0
68½	20	44¼	13⅛	N.P.	Cities Service.....	200,000	12	12⅛	10¼	10¾	— 1¼
99¼	84	93⅞	52	100	do pfd.....	3,400	71	71	62¾	63¾	— 8⅝
9¼	8	9	7¼	10	do pref. B.....	300	5½	5½	5⅜	5½	+ ⅜
96	81	89⅞	80	100	do pref. BB.....	150	85	85	78	85	+ 5⅜
1½	¼	⅛	⅛	1	Colombia Syndicate..	7,800	⅛	⅛	⅛	⅛	0
15	3⅞	8¼	1⅜	N.P.	Colon Oil Corp.....	1,900	1⅛	1⅛	⅞	⅞	— ⅜
..	..	21	3⅝	N.P.	Columbia Oil & Gas..	3,300	3	3¼	2¾	2¾	— ½
11⅜	2½	5⅞	2	10	Consolidated Royalty	.....	.....	.....	.....	.....	.....
135	42	74¾	1½	N.P.	Cosden Oil Co.....	2,200	1	1	1	1	0
87	55	70	10¼	100	do pfd.....	.....	.....	.....	.....	.....	.....
2½	¼	1	¼	N.P.	Crown Central Pet...	600	⅜	⅜	¼	⅜	0
11½	4	..	..	N.P.	Crystal Oil.....	.....	.....	.....	.....	.....	.....
51⅛	51⅛	..	..	100	do pfd.....	.....	.....	.....	.....	.....	.....
26	6½	13½	4¼	N.P.	Darby Petroleum.....	.....	.....	.....	.....	.....	.....
..	..	21¾	21½	N.P.	do new.....	.....	.....	.....	.....	.....	.....
11	2	11	2	N.P.	Derby Oil & Refg....	2,300	2⅞	2⅞	2½	2½	— ⅜
44	17	60	30	N.P.	do pfd.....	.....	.....	.....	.....	.....	.....
..	..	12	12	10	Devonian Oil.....	.....	.....	.....	.....	.....	.....
209	115	166⅞	58½	$25	Gulf Oil Corp.....	3,500	46⅛	46½	41⅜	41⅜	— 4⅝
7½	1⅛	4	2¼	N.P.	Homaokla Oil.....	.....	.....	.....	.....	.....	.....
..	..	47½	12¾	N.P.	Indian Territory A...	800	10¾	11	10⅜	11	+ ½
..	..	53½	12⅜	N.P.	do B.....	100	10	10	10	10	— 2¾
2⅞	⅜	1¾	⅜	10	Intercontinental Pet..	6,700	⅜	⅜	¼	⅜	— 1⅛
3⅜	1¼	3	⅞	N.P.	Kirby Petroleum.....	300	⅝	⅝	⅝	⅝	+ ⅛
6⅛	1	4¾	½	N.P.	Leonard Oil & Dev...	8,400	½	¾	½	½	— ⅛
38⅞	18	29	5	N.P.	Lion Oil Refg.....	300	4⅛	4⅛	3½	3½	— ¾
67⅞	28	55⅞	19⅝	N.P.	Lone Star Gas.....	3,600	16½	16½	15¼	15½	— ¾
..	..	31	5½	$25	MacMillan Petrol....	.....	.....	.....	.....	.....	.....
2⅞	¼	½	⅛	1	Magdalena Synd.....	3,100	¼	⅜	¼	⅜	+ ⅛
38½	14	16	3	N.P.	Margay Oil.....	100	4⅞	4⅞	4⅞	4⅞	+ ⅛
6⅜	2¼	7½	1¾	N.P.	Mexico Ohio Oil.....	300	3½	3½	2⅝	3½	0
..	..	11⅞	2¼	N.P.	Middle States A v.t.c.	300	2⅞	3⅛	2½	3⅛	+ ¼
..	..	6	¾	N.P.	do Class B v.t.c.	300	⅞	⅞	⅞	⅞	— ⅛
42	8	36¼	5	5	Missouri-Kansas P.L.	5,400	5¼	5¼	4¾	4⅞	— ½
1½	¼	¾	⅜	1	Mountain & Gulf Oil.	100	¼	¼	¼	¼	0
22⅞	7	12⅛	4½	10	Mountain Producers..	2,500	3¾	3⅞	3⅜	3½	— ⅜
43⅞	24	41⅜	19⅞	N.P.	Nat. Fuel Gas.....	1,500	18½	19¼	17¾	17¾	— 1
5	2¼	3½	1⅛	$5	New Bradford Oil....	600	1	1	1	1	0
4¾	3⅛	3⅛	2⅛	10	New England Fuel...	300	2	2	2	2	0
24½	11⅛	16⅞	4	25	N. Y. Pet. Royalty...	.....	.....	.....	.....	.....	.....
18½	6⅛	11¼	2⅛	N.P.	North Central Texas	1,000	1¼	1¼	1⅛	1⅛	— ⅜
19¼	8⅛	11⅜	3⅞	N.P.	Oilstocks Ltd. A.....	2,800	2¼	2¼	1⅞	2	— ¼
18¼	8½	11½	4¾	N.P.	do B.....	100	2½	2½	2½	2½	— ½
26⅝	12⅛	19½	6½	N.P.	Pacific Western Oil...	1,200	6⅛	6⅛	5¾	5¾	— ⅜
3½	½	2½	¼	N.P.	Pandem Oil.....	10,000	¼	⅜	¼	¼	+ 1/16
10½	2¼	4⅜	1	N.P.	Pantepec Oil.....	300	⅝	⅝	⅝	⅝	0
25½	13⅛	15	13⅛	$25	Paragon Refg. B. ctfs.	.....	.....	.....	.....	.....	.....
28	17	29	19⅛	N.P.	Petroleum Corp.....	.....	.....	.....	.....	.....	.....
..	..	5⅞	½	....	do warrants.....	300	⅝	⅝	⅝	⅝	0
37	22	27½	16¼	N.P.	Plymouth Oil.....	1,300	7⅛	7⅛	6⅝	6⅝	— ½
16	9	10½	3	$5	Red Bank Oil.....	.....	.....	.....	.....	.....	.....
8½	1⅛	5⅜	1	N.P.	Reiter-Foster Oil....	2,300	¾	⅞	⅝	⅝	— ¼
25¼	19	23½	7	25	Richfield Oil pfd.....	300	13¾	13¾	13¾	13¾	— ¼
29	13	25	2¼	N.P.	Root Refining pr. pfd.	100	13¾	13¾	13¾	13¾	— ¼
11	3	8⅝	2	N.P.	Ryan Consolidated...	100	13¾	13¾	13¾	13¾	0
5⅞	1⅞	2½	½	10	Salt Creek Consol....	.....	.....	.....	.....	.....	.....
25⅞	9	15¼	5¼	10	Salt Creek Producers.	2,800	4⅞	5	4⅛	4⅞	— ⅛
33⅛	10	8	1¾	25	Shreveport El Dorado	100	2	2	2	2	— 1⅛
..	..	39⅛	39	25	Signal Oil & Gas A...	.....	.....	.....	.....	.....	.....
24	9	17	6	N.P.	Southland Royalty...	1,900	3⅞	4	3¾	3¾	— 1⅛
12	4	10	2	5	Sunray Oil.....	1,100	1⅞	1⅞	1¾	1¾	— ¼
23	7⅛	19½	8	N.P.	Texon Oil & Land....	300	7½	8	7½	8	+ ½
81⅛	8⅞	16	8	10	Venezuela Mexico....	.....	.....	.....	.....	.....	.....
6½	1⅛	4½	¾	5	Venezuela Petroleum.	1,000	¾	¾	⅝	¾	0
9⅛	2	5	2	1	Woodley Petroleum..	.....	.....	.....	.....	.....	.....
5⅜	¼	2½	⅜	N.P.	Y Oil & Gas.....	1,600	½	1¼	½	1	+ ½

*New High †New Low §From close of preceding week.

New York Bonds

Week Ending May 29

	High	Low	Last	Change§
Asso. Oil gold 6s.....	102⅞	102¾	102¾	0
Atlantic Refg. deb. 5s...	102¼	101½	101⅝	— ⅛
Cal. Pet. 5s.....	88½	84¼	88½	+4½
Cal. Pet. 5½s.....	91	90	90	— 1
General Pet. 5s.....	102¾	102½	102½	— ¼
Humble Oil & Refg. 5s..	101	100¾	100⅞	— ⅛
Humble Oil & Refg. 5½s.	103	102⅞	103	0
Pan Amer. P. & T. cvt. 6s	102¼	102	102	— ⅛
Pan Amer. P. & T. 6s....	40	30½	30½	-9
Phillips Pet. 5½s.....	65	59	60	—6
Pure Oil 5½s.....	80⅛	79	80	0
Shell Union Oil 5s.....	84	79	80	—4
Sinclair Con. Oil 7s.....	91½	89⅞	89⅞	—1⅝
Sinclair Con. Oil 6½s....	82	79	80	—1⅞
Sinclair Con. Crude 5½s.	102⅜	102¼	102½	+ ⅜
Sinclair Pipeline.....	100¼	100	100⅛	+ ⅛
Skelly Oil 5½s.....	49¾	45	45	—4¾
S. O. N. J. 5s.....	103½	103¼	103¼	— ¼
S. O. N. Y. 4½s.....	99⅛	98½	99¼	+ ⅝
Union Oil of Calif. 5s C.	99	98⅞	99	0
Warner-Quinlan 6s.....	48	44⅛	44⅛	—6

New York Curb Bonds

Week Ending May 29

	High	Low	Last	Change§
Beacon Oil 6s '36.....	99	98	99	+1
Cities Serv. 5s '66.....	66⅜	62⅝	63¼	—3⅝
Cities Serv. 5s '50.....	64⅛	64	64	— ½
Cities Serv. G. 5½s '42..	67½	65⅜	66⅜	— ¼
Cont. Oil 5½s '37.....	85	82½	83	— ¼
Empire O. & R. 5½s '42.	57½	55⅜	56¼	— ⅞
Gulf Oil 5s '37.....	101	100	100⅛	+ ⅛
Gulf Oil 5s '47.....	100⅝	100	100½	0
Indep. Oil 6s '39.....	74½	74	74	— ¼
Sun Oil 5½s '39.....	101⅜	101¼	101¼	— ¼
Valvoline Oil 7s '37....	91⅛	91⅛	91⅛	0

Oil Dividends

	Amount	Payable	Stock of Record
Chesebrough Mfg. Co. q.	$1	June 30	June 9
do extra.....	50c	June 30	June 9
Humble Oil & Refg. q....	50c	July 1	June 1
New York Transit q....	15c	July 15	June 26
do extra.....	10c	July 15	June 26
N. Cent. Texas pfd q....	$1.62½	July 1	June 10
Prairie Pipe Line q.....	75c	July 1	May 29
Shell Union Oil pfd. q....	$1.37½	July 1	June 10
S. O. Kentucky q.....	40c	June 30	June 15
S. O. Export pfd. s.a....	$2.50	June 30	June 9
The Texas Corp. q.....	50c	July 1	June 5
Texon Oil & Land q.....	25c	June 30	June 10

United States exports of paraffin wax in February to the United Kingdom, the largest taker, totaled 5,050,000 pounds. Other large importers of this product were Italy, which took 4,835,000 pounds; Belgium, 1,700,000 pounds; Spain, 1,545,500 pounds; and Germany, which took 1,441,000 pounds.

THIS WEEK'S National Petroleum NEWS

Coming Meetings

American Society of Mechanical Engineers, National Oil & Gas Power meeting, Madison, Wis., June 15 to 18.

Society of Automotive Engineers, White Sulphur Springs, W. Va., June 15 to 19.

West Virginia Oil Marketers Association, Daniel Boone Hotel, Charleston, W. Va., June 18, 19.

American Society for Testing Materials, Hotel Stevens, Chicago, June 22 to 26.

National Petroleum Association, Hotel Traymore, Atlantic City, N. J., Sept. 16, 17, 18.

American Institute of Mining and Metallurgical Engineers, Petroleum Division, Houston, Tex., Oct. 2, 3.

American Petroleum Institute, annual meeting, Stevens Hotel, Chicago, Nov. 10 to 12.

Third International Conference on Bituminous Coal, at Carnegie Institute of Technology, Schenley Park, Pittsburgh, Pa., Nov. 16 to 21.

Geological Society of America, Mayo Hotel, Tulsa, Dec. 28 to 31.

NATIONAL PETROLEUM NEWS

Vol. 23 No. 23

Published by

The National Petroleum Publishing Co.
1213 W. Third St., Cleveland, O.
Tel. CHerry 7672

Branch Offices:

Tulsa, 904 World Bldg., Tel. 3-7132.
New York, 342 Madison Ave., Tel. Vanderbilt 3-3950 and 3-3951.
Houston, 2420 Gulf Bldg., Tel. Fairfax 6286.
Chicago, 35 E. Wacker Drive, Tel. State 4141.

Subscription rate $3.50 per year, U. S., Mexico and Canada; $5 Foreign countries. Current copies 10 cents; for back issues more than two months old 25 cents per copy.

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Member Audit Bureau of Circulations and Associated Business Papers.

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Institute Directors Visit East Texas

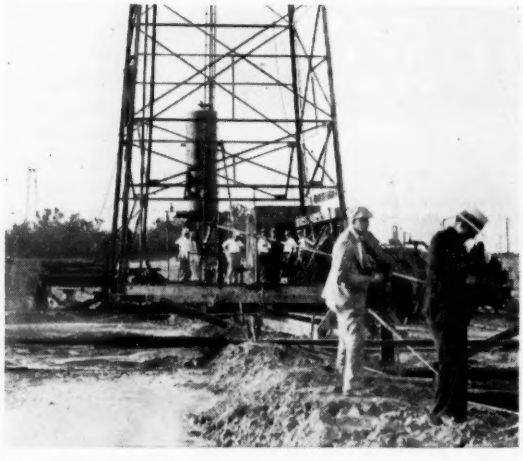
Henry M. Dawes, president of the Pure Oil Co., was host to the party at dinner in the Van pool camp

Raymond J. Brennan and Forest D. Dorn, of the Forest Oil Corp., Bradford, Pa., watch a well "come in"

Lauren J. Drake, Union Tank Car Co.; William R. Boyd, Jr., executive vice-president, American Petroleum Institute and W. T. Holliday, president, Standard Oil Co. of Ohio

D. S. Bushnell, president, Buckeye Pipe Line Co.

O. D. Donnell, president of the Ohio Oil Co., and his son Dewey



The Pure Oil Co. saved up a well for completion in the Van pool so the visitors could watch the performance